

FORTY-SIXTH ANNUAL REPORT
OF THE
DEPARTMENT OF MARINE AND FISHERIES

For the Fiscal Year

1912-13

MARINE

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OTTAWA

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EXCELLENT MAJESTY

1914

[No. 21—1914.]

*To His Royal Highness, Field Marshal Prince Arthur William Patrick Albert,
Duke of Connaught and Strathearn, K.G., K.T., K.P., etc., etc., etc., Governor
General and Commander-in-Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR ROYAL HIGHNESS:

I have the honour to submit herewith, for the information of Your Royal Highness and the Parliament of Canada, the Forty-Sixth Annual Report of the Department of Marine and Fisheries, Marine Branch.

I have the honour to be,

Your Royal Highness's most obedient servant,

J. D. HAZEN,
Minister of Marine and Fisheries.

DEPARTMENT OF MARINE AND FISHERIES,
OTTAWA, November, 1913.

SUMMARY OF CONTENTS

	PAGE.
REPORT SUBMITTED BY MINISTER.	
REPORT OF DEPUTY MINISTER, Subjects paged in the Summary below.	
A	
Agencies of Marine and Fisheries	3
Aberdeen.....	12
Annapolis Port Warden's Report	350
Arichat Pilotage Authority	367
B	
Branches of Marine Department	2
Buoys, Beacons, Submarine Bells and Lightstations	6
Brant.....	15
Belleville Harbour Commission	22
" " Report of Commissioners	348
Bathurst Pilotage Authority	368
Bras d'Or " 	369
Buctouche " 	370
C	
Champlain	10
Correspondence and Record Branch	28
Chief Engineer's Report	33
" " Detailed Report on Construction, Establishment and Improve- ment of Lighthouses and Aids to Navigation.....	41
" " Nova Scotia	41
" " New Brunswick	44
" " Prince Edward Island	45
" " Quebec	46
" " Montreal District	48
" " Ontario and N. W. Provinces	50
" " British Columbia	52
" " Prescott Depot	56
Commissioner of Lights' Report	60
" " " Statement of Lights and Fog Alarms	61
" " " " Lightkeepers.....	62
" " " " New Brunswick ..	62
" " " " Nova Scotia..	64
" " " " Prince Edward Island ..	68
" " " " Quebec..	69
" " " " Montreal District..	72
" " " " Ontario..	75
" " " " Manitoba..	78
" " " " British Columbia..	78
" " " " Gas Buoys.....	80
" " " " Nova Scotia..	80
" " " " New Brunswick..	80
" " " " Prince Edward Island ..	81
" " " " Quebec ..	81
" " " " Montreal District ..	82
" " " " Prescott Agency..	83
" " " " Lake Ontario....	84
" " " " Lake Erie ..	84
" " " " Detroit River..	84
" " " " Thames River....	84
" " " " St. Clair River....	84
" " " " Southampton District....	84
" " " " Georgian Bay..	85
" " " " Sturgeon River..	85
" " " " Sault Ste. Marie..	85
" " " " Port Arthur..	85
" " " " British Columbia..	86
" " " " Changes in Floating Aids.....	87
" " " " Unlighted Buoys..	92
Chatham, N.B., Port Warden's Report.....	350
Caraquet Pilotage Authority	371

D

	PAGE
Dominion Steamers	9
<i>Druid</i>	10
Dominion Steamers, New, <i>Estevan</i>	16
“ “ <i>Dollard</i>	17
<i>Dollard</i>	17

E

Expenditure and Appropriation	1
“ “ Statement of, for Department of Marine and Fisheries, 1912-13	142
Expenditure since Confederation	425
<i>Eureka</i>	10
<i>Earl Grey</i>	13
<i>Estevan</i>	16

G

<i>Granier</i>	16
----------------------	----

H

Harbour Masters, List of	151
Harbour Commissioners, Report of Montreal	239
“ “ Quebec	303
“ “ Toronto	316
“ “ Three Rivers	341
“ “ North Sydney	344
“ “ Pictou	347
“ “ Belleville	348
Halifax Port Warden's Report	351
“ Pilotage Authority	372
Harvey and Alma Pilotage Authority	375

I

Icebreaking Contracts	5
-----------------------------	---

L

Lighthouse Construction and Repairs	3
“ Service	5
<i>Lady Laurier</i>	11
<i>Lansdowne</i>	12
<i>Leebro</i>	16
<i>Lambton</i>	18
Life-Saving Service	24
“ “ Report of General Superintendent	221
“ “ List of Stations	226
Live Stock Shipments	29
“ “ Statement of	238
Legislation	32
Louisburg Port Warden's Report	353
“ Pilotage Authority	376

M

<i>Montcalm</i>	9
<i>Montmagny</i>	11
<i>Minto</i>	14
<i>Maisonneuve</i>	17
Meteorological Service	18
“ “ Report of Director	156
Montreal Harbour Commission	20
“ “ Report of Commissioners	239
Marine Hospitals	26
“ “ Report of Medical Superintendent	169
Masters and Mates	30
“ “ List of Certificates Granted to	211
Montreal Port Warden	31
“ “ Report of	354
Moncton Port Warden, Report of	354
Miramichi Pilotage Authority	377
Minas Basin Pilotage Authority	379
Montreal Pilotage Authority	380

N

	PAGE
Newington	16
North Sydney Harbour Commission	23
" " " Report of Commissioners.....	344
Navigation Schools	29
" " Report of	210
Nanaimo Port Warden, Report of	360
North Sydney Port Warden, Report of.....	360
Nanaimo Pilotage Authority	392
New Westminster Pilotage Authority.. ..	394

O

Obstructions to Navigation, Removal of	5
--	---

P

Pictou Harbour Commission	22
" " " Report of Commissioners	347
Pilotage Authorities	30
Port Wardens, List of	31
Permanent International Association of Navigation Congresses.....	31
Port Wardens, Reports of	350
" " Annapolis, N.S.....	350
" " Chatham	350
" " Halifax, N.S.....	351
" " Hawkesbury Port, N.S.....	352
" " Louisburg, N.S.....	353
" " Moncton, N.B.....	354
" " Montreal, P.Q.....	354
" " Nanaimo, B.C.....	360
" " North Sydney	360
" " Prince Edward Island	360
" " Quebec, P.Q.....	361
" " St. Andrews, N.B.....	362
" " Sydney, N.S.....	362
" " Vancouver, B.C.....	364
" " Victoria, B.C.....	364
" " Yarmouth, N.S.....	365
Port Hawkesbury, Port Warden's Report.....	352
Pilotage Authorities, Summary of Reports	366
" " Report of Arichat, N.S.....	367
" " " Bathurst, N.B....	368
" " " Bras d'Or, N.S.....	369
" " " Buctouche, N.B.....	370
" " " Caraquet, N.B.....	371
" " " Halifax, N.S.....	372
" " " Harvey, N.B.....	375
" " " Louisburg, N.S....	376
" " " Miramichi, N.B.....	377
" " " Minas Basin, N.S.....	379
" " " Montreal, P.Q.....	380
" " " Nanaimo, B.C.....	392
" " " New Westminster, B.C.....	394
" " " Parrsboro, N.S.....	395
" " " Pictou, N.S.....	396
" " " Port Medway, N.S.....	397
" " " Pugwash, N.S.....	397
" " " Quebec, P.Q.....	399
" " " Restigouche, N.B.....	402
" " " Richibucto, N.B.....	404
" " " Sackville, N.B.....	405
" " " Shediac, N.B.....	406
" " " Shepody Basin	407
" " " St. Ann's, N.S....	408
" " " St. John, N.B.....	409
" " " Sydney, N.S.....	412
" " " Tidnish, N.S.....	415
" " " Vancouver, B.C.....	415
" " " Victoria and Esquimalt	417
" " " Wallace, N.S.....	419

Q

Quadra	15
Quebec Harbour Commission	21
" " " Report of Commissioners	303
Quebec Pilotage Authority	399
Quebec, Port Warden's Report	361

	R	PAGE
<i>Rouville</i>		10
Revenue, Statement of		144
Restigouche Pilotage Authority		402
Richibucto Pilotage Authority		404
	S	
St. Lawrence River Ship Channel		6
" " Report of Superintending Engineer		96
" " History of Ship Channel		96
" " Accidents in 1912		97
" " Marine Signal Service		98
" " General Icebreaking		99
" " General Information		101
" " Cost of Ship Channel to Date		103
" " Average Depth of Water to date (1890-1912)....		103
" " Total Cost of Dredging, Cost of Plant and		
Quantity Dredged		104
" " Dredging Operations		104
" " Abstract of Work, 1912		116
" " Disbursements for Tugs, Dredges, &c.....		118
" " Abstract Cost of Dredging, Cubic Yard		120
" " Dredging Fleet, Description of		122
" " Expenditure for Fiscal Year		126
Sorel Shipyard		8
" Report of Director		128
" Repairs to Tugs, Dredges, Scows, &c.....		128
" Construction of Tugs, Dredges, Scows, &c.....		136
" Repairs to Shipyard Buildings		137
" Statement of Revenue and Expenditure, 1912.....		140
<i>Stanley</i>		12
<i>Scout</i>		17
<i>Simcoe</i>		17
<i>Shamrock</i>		17
Steamboat Inspection and List of Inspectors.....		23
" Report of Chairman		232
Sick and Distressed Mariners		26
" " Report of Medical Superintendent		169
Sable Island Humane Establishment		29
" " Report of Superintendent		231
Shipping and Discharging of Seamen		30
" " Statement of		420
Signal Station, Halifax		230
" Service, St. Lawrence river		98
St. Andrews, Port Warden's Report.....L.....		362
Sydney, Port Warden's Report		362
Sackville Pilotage Authority		405
Shediac Pilotage Authority		406
Shepody Basin Pilotage Authority		407
St. Ann's Pilotage Authority		408
St. John Pilotage Authority		409
Sydney and North Sydney Pilotage Authority.....		412
	T	
Three Rivers Harbour Commission		21
" " Report of Commissioners		341
Toronto		22
" " Report of Commissioners		316
Tidnish Pilotage Authority		415
	V	
<i>Verchères</i>		17
Vancouver, Port Warden's Report		364
Victoria, Port Warden's Report		364
Vancouver Pilotage Authority		415
Victoria and Esquimalt Pilotage Authority.....		417
	W	
Wrecks and Casualties, Investigations		24
" " Report of Commissioner		182
" " Report of		25
" " Statement of		188
Wrecking Plants, Reports of Salvage		25
Wharfingers, List of		145
Wallace Pilotage Authority		419
	Y	
Yarmouth, Port Warden's Report.....		365

REPORT

OF THE

DEPUTY MINISTER OF MARINE AND FISHERIES

To the Honourable J. D. HAZEN,
Minister of Marine and Fisheries.

SIR,—I have the honour to report on the transactions and service of the Marine Branch of the Department of Marine and Fisheries for the fiscal year ending March 31, 1913.

This report contains the annual reports of the officials of the Marine branch and the reports of harbour commissioners, pilotage authorities, port wardens and report of wrecks and casualties. The reports of harbour commissioners, pilotage and port wardens are for the calendar year 1912.

The season of navigation of 1912 opened, generally speaking, from the 1st to the 12th of April and closed on the 12th to the 15th of December, except in harbours usually open all the year. Port Arthur and Fort William were kept open by ice-breaking tugs under contract until the 15th of January, 1913. The contract for keeping open these harbours was extended from the 15th of December to the 15th of January to enable grain vessels to move to different elevators to load grain, thereby affording storage of grain during the winter for shipment in the spring, in addition to the storage in grain elevators.

Quebec harbour was kept open all winter by the ferry boats plying between Quebec and Lévis and by the C.G.S. *Montcalm* working in the harbour. The *Montcalm* was employed during part of the month of February in carrying passengers and freight between Quebec and Lower St. Lawrence ports.

The work of construction of lighthouses and fog-alarm buildings extended over the usual length of time, but the season was not so favourable for this class of work as in 1911 when the weather permitted more continuous opportunities for carrying on work of construction of lighthouses in different localities.

The maintenance of buoys and other aids to navigation covered the ordinary period of navigation.

The expenditure of the department for the fiscal year was \$6,135,176.69. The appropriation by Parliament for Marine and Fisheries services was \$7,597,068.37, leaving an unexpended balance at the close of the year of \$1,461,891.68. Of the total

4 GEORGE V., A. 1914

expenditure of the Department of Marine and Fisheries, the sum of \$761,956.74 was spent for fisheries from the appropriation of Parliament; and for fishing bounty, which is not an appropriation of Parliament, \$159,996.40.

The ocean and river service included expenditure on Dominion steamers for maintenance and general upkeep, rewards for saving life, etc., wrecking plant subsidies, investigations into wrecks, patrolling northern waters, and other smaller items; total for this service, \$1,121,200.11.

Public works expenditure chargeable to capital consisted of dredging in the St. Lawrence river ship channel and maintenance of plant; total, \$1,324,589.85.

The lighthouse and coast service expenditure included cost of construction of lighthouses and fog alarms, maintenance and repairs of all lighthouses, salaries and allowances to lightkeepers, expenditure in connection with lighthouse and buoy steamers: one for the Pacific coast, one for the upper St. Lawrence river and one for the buoy service between Montreal and Quebec: agencies, etc., amounting in all to \$2,262,735.20 for lighthouse and coast service. For scientific institutions—meteorological and magnetic service,—the expenditure was \$147,446.08.

For marine hospital service, the sum of \$53,690.36 was expended; and for steamboat inspection, \$54,147.50.

The full statement of votes of Parliament, expenditure and unexpended balances, forms an appendix to this report.

The net revenue of the Marine branch of the department, for the fiscal year derived from wharfs and piers, masters and mates certificates, steamboat inspection, etc., amounted to \$182,627.67. The statement of revenue also forms an appendix to this report.

The subdivisions and branches of service under which the whole work of the Marine branch was carried out are as follows:—

The construction of lighthouses and fog-alarms by the Engineer's branch.

The maintenance of lights, gas buoys and other buoys by the Commissioner of Lights' branch.

The Lighthouse Board, which decides the necessity for aids to navigation.

The ship channel, St. Lawrence river, and Sorel works.

Meteorological and magnetic service.

Investigations into wrecks.

Board of steamboat inspection.

Cattle shipments inspection.

Marine hospitals.

Submarine signals.

Shipping under the Merchants' Shipping Act.

Legislation and administration of laws relating to the Department of Marine and Fisheries.

Humane service in connection with seamen.

Wrecking plant subsidized.

Winter communication.

Removal of obstructions to navigation.

Examination of masters and mates, and issuing certificates.

Pilotage.

SESSIONAL PAPER No. 21

Government of ports and proclaiming of harbours in the Dominion.
Control of harbours and Government wharfs.
Dominion steamers, Marine branch.
Port wardens.
Wreck receivers.
Harbour commissioners.

The agents of the department at Halifax, St. John, N.B., Charlottetown, Quebec, Montreal and Victoria, B.C., reported the work done in these districts in connection with lighthouse and buoy service and the movements of Dominion steamers in attending to the usual duties performed in the various waters in the several provinces. The supplying of lighthouses and buoy service in Ontario and Manitoba was carried out by officers receiving instructions directly from headquarters at Ottawa. During the year an agent was appointed for the district of Port Arthur and Fort William. For more efficient control of the service in British Columbia, the district has been divided into the southern and northern sections and a sub-agent appointed with quarters at Prince Rupert. The sub-agent reports the work under his charge through the agent at Victoria.

The annual reports of heads of branches have been examined and contents summarized, for brevity, in referring to the transactions of the department.

LIGHTHOUSE CONSTRUCTION AND REPAIRS.

The construction of towers, other buildings, protection work and repairs was performed under the Engineer's branch of the department. Plans and specifications of the various kinds of buildings and class of work were first prepared, and the work carried out in accordance with them under inspection.

In the province of Nova Scotia, one diaphone building was erected and diaphone apparatus installed, two pole lights established, three lighthouse dwellings built, three coal sheds, two storing sheds and one slipway and protection work at two stations were built; a dam was enlarged and covering way made, and a suspension bridge connecting two small islands at St. Paul's island were constructed; alterations and improvements were made at nine existing stations; minor improvements and repairs were made at a number of other stations.

In the province of New Brunswick, two pole lights with sheds were erected, one concrete lighthouse tower completed, one wooden tower, one boat-house and slip built and alterations of illuminating apparatus at three stations; improvements and repairs were made at nine stations.

A large wharf and buoy depot is under construction in St. John harbour.

In Prince Edward Island, one new tower, one oil store, building for storing explosives were built; one skeleton steel tower and one pole light were erected; illuminating apparatus altered at one station and improvements and repairs were made at two other stations.

In Quebec, four concrete towers were constructed, one diaphone building with apparatus installed, one steel skeleton tower, two wooden towers and two pole lights were erected; five lighthouse dwellings were built and one rebuilt, two diaphones

4 GEORGE V., A. 1914

installed, light sheds and three boat-houses built, lines of water pipe at one station laid, protection work at one station built and repairs and improvements made at twelve stations.

In the Montreal agency, eight wooden towers, four steel skeleton towers and one pole light were erected; two beacons, one oil house and a pier were built and improvements and repairs made at nine different stations.

The work in Ontario and Northwest provinces consisted of construction of buildings at Amherstburg for buoy depot, two wooden and two concrete towers, one fog alarm building and one concrete foundation built; two steel skeleton towers and two pole lights erected, one lighthouse dwelling, one oil store, one coal shed, one boat-house and one concrete beacon built, two sixth order, two fifth order, three fourth order, one electric flashing and one occulting apparatus installed; repairs and improvements carried out at eleven stations.

At Prescott depot, a brass foundry was established, gas buoys inspected, tests of fuel oil, experimental tests of illuminating apparatus made and fitting up lanterns sent to different lighthouse stations in the Dominion; repairs of illuminating apparatus and necessary repairs to the machinery of lighthouse and buoy tenders *Lambton*, *Scout* and *Reserve* and to the hydrographic service steamer *Bayfield* were done. Work in connection with repairs to moorings of gas and other buoys was performed at this depot and patterns for castings made; also drawings of various kinds pertaining to work usually done at the depot were made.

In British Columbia, one lightship was equipped and placed, three concrete towers, one fog-alarm and lighthouse dwelling, four fog-alarm buildings, three double lighthouse dwellings, three single dwellings, two boat-houses, three oil sheds and two outbuildings erected; machinery at four fog-alarm stations installed and four duplicate sets supplied. Repairs and improvements were made at nine other stations.

The extra work for completion of the Prince Rupert buoy and lighthouse depot was performed.

For the life saving service, combined dwellings and boat-houses were built at Bay View, N.S., Cheticamp, N.S., and Uclulet, B.C., and repairs done at other stations. Sites were procured for the establishment of life saving stations at Souris, P.E.I., Escuminac, N.B., Little Wood island, N.B., and for an additional station at Toronto, Ont.

Wireless station buildings for the Naval department were erected at Pachena point, B.C., and Estevan, B.C.

For the Meteorological branch, storm signal masts were erected at Point Tupper, N.S., Tadousac, P.Q., and a site procured and plans made for a marine signal station at Grondines, P.Q.

The total number of light stations throughout the Dominion at the end of the fiscal year was 1,020, counting those range lights with separate keepers, consisting of first, second, third, fourth, fifth, sixth and seventh order, apparatus pressed bulb lights and catoptric lights. Lightships, lightboats and gas buoys are not included in the number of lights, but form a separate list of aids to navigation.

Notices to Mariners were issued, relating to the establishment of aids to navigation, changes in established aids and improvements to lighthouse buildings, fog-alarms, beacons and buoys. These notices contain valuable information and have

SESSIONAL PAPER No. 21

been sent to various ports where masters of vessels can procure them for their guidance in entering ports and navigating waters in which the improvements have been made. Known obstructions to navigation, caused by wrecks and accidents to vessels, were made subjects of notices. In addition, notices were also issued for the benefit of Canadian mariners, respecting aids in waters contiguous to Canadian waters around the coast of Newfoundland, Labrador and part of the United States. Some important notices were sent out relating to changes and improvements in British and foreign waters, but these notices did not embrace all British and foreign notices received by the department. Selections only of special concern to Canadian seamen were made and included in the departmental 'Notices to Mariners.' All hydrographic notes which reached the department, however, were embodied in Canadian notices.

The list of lights was published in three volumes entitled: Atlantic Coast, including the St. Lawrence river to head of ocean navigation; Inland Waters, comprising the great lakes and minor waters in Ontario and Manitoba; Pacific Coast and Inland Aids in British Columbia.

The details of all work performed in the Engineer's branch will be found in the report of the chief engineer, Appendix No. 1.

REMOVAL OF OBSTRUCTIONS TO NAVIGATION.

Removal of obstructions to navigation is under the control of the Engineer's branch.

The following obstructions were removed during the year: *Florida*, sunk in Montreal harbour. Scow *Newel Hubbard*, sunk at Hocket Beach. An old barge sunk, entrance of Chateauguay river, P.Q. A derelict in Vancouver harbour, B.C., s.s. *Joliet*, sunk in St. Clair, Ont.; and logs from Victoria harbour, B.C.

ICEBREAKING IN INLAND WATERS.

Two contracts for icebreaking in Thunder bay were made: one to keep the harbours of Port Arthur and Fort William and West Fort William open for navigation until December 17, 1912, and to open these harbours in the spring of 1913, when the Sault Ste. Marie canal opened for navigation. The contract price was \$19,250, and included an agreement to remove all lightkeepers from their stations when the lights were extinguished; in addition, a contract was made to keep the ice broken in these harbours for removal of vessels to elevators up to the 15th of January at \$1,000 per day. Another contract was entered into to keep the St. Joseph's channel clear of ice until the extreme cold weather made ice sufficiently strong to carry teams from the mainland to St. Joseph's island, and to open the channel before the ice became dangerous for travelling in 1913; cost, \$500. Another contract was entered into to keep the channel open in the Sault river, particularly at Mud lake, from the 12th to 19th of December at \$700 per day.

LIGHTHOUSE SERVICE.

Under this head is included the maintenance of lighthouses by the delivery of supplies during the year. The superintendents of lights in the different agencies

4 GEORGE V., A. 1914

selected, as usual, for each lighthouse and fog-alarm the articles necessary to keep the lights in operation, and under their supervision these supplies were delivered to the lightkeepers. The superintendents received their instructions from the agents, with the exception of the lighthouse district of Ontario. The officer for this province has his headquarters in Ottawa, and performed the work on the great lakes successfully by the use of the Dominion steamer *Simcoe*. This vessel was also employed to carry building material for repairs to lighthouses at the same time, and carried out the gas buoy service in several districts.

The work performed in the several agencies by superintendents of lights in connection with lighthouse maintenance has been reported by the agents.

BUOYS, LIGHT-STATIONS AND SUBMARINE BELLS.

The Commissioner of Lights and Buoys has reported upon the lights in operation in the Dominion; also of lightkeepers work and appointments, of submarine warning bells and stations. His report consists of statements of the number of lights exhibited and other aids to navigation along the coasts and on the lakes and rivers, and the number of lightkeepers attending them. Gas and other buoys are under the control of this branch. Statements have been prepared showing the details of the service mentioned here.

Submarine warning apparatus received the attention of the Commissioner of Lights. The experiments made in the way of securing submarine bells to gas buoys by an improved attachment proved satisfactory.

It will be seen by this report that 1,393 lights were exhibited of dioptric, catoptric, electric and acetylene apparatus. The illuminant in the dioptric and catoptric lights was kerosine oil refined to a high flash test in accordance with a specification prepared by the department. At a number of lighthouses, the power of the light has been increased by exchanging a higher for a lower order of apparatus in the dioptric lanterns. This work has been carried on in accordance with a plan to bring the lights up to a modern standard. The improvement in the buoy service has gradually been kept up by replacing unlighted buoys by gas buoys and warning buoys of the whistling and bell type and by the placing of additional can, conical and spar buoys in a number of localities to mark dangers and indicate channels.

Several fog-alarms of the diaphone type were put in operation, several trumpets and hand fog horns were supplied different lighthouse stations. Lightkeepers were placed in charge of new lights, increasing the total number of keepers. Submarine bell apparatus has continued to give most satisfactory service, where employed on lightships, as well as the bells attached to buoys and in connection with the land stations.

The report of the Commissioner of Lights forms appendix No. 2 to this report.

ST. LAWRENCE SHIP CHANNEL.

The ship channel of the river St. Lawrence between Montreal and Father Point has a total length of 340 statute miles.

The contracted part of the river, which may properly be called the 'ship channel,' commences at the Traverse, 220 miles distant from Montreal.

SESSIONAL PAPER No. 21

The project for the channel between Montreal and Quebec has in view a channel of 30 feet depth, at the extreme low water of 1897, from Montreal to tidal water at Batiscan, and from Batiscan to Quebec at extreme low tide. The width contemplated was a minimum of 450 feet in the straight portions, and from 550 to 750 feet at the bends. An anchorage is provided at White Buoy curve, lake St. Peter, of 800 feet in width.

The 30-foot channel is now completed to the upper end of Cap à la Roche channel, a distance of $107\frac{1}{2}$ miles from Montreal.

During the summer of 1912 the Cap Charles channel widening was about completed to 450 feet in width.

The total length of dredging in the project is 70 miles; length dredged in 1912, 0.55 of a mile; total length of 30-foot channel dredged is 65.80 miles; length yet to be dredged, 4.20 miles.

A good start was made on the north channel below Quebec with two dredges. It has been decided to deepen this channel to 35 feet at extreme low tide, with a width of 1,000 feet. Good progress was also made on the channel approach to the floating dock basin, Montreal harbour. Owing to the nature of the material to be removed it will take one more season to complete the approach. The total cost of the ship channel, from 1851 to the end of the fiscal year 1912-13, has been \$15,617,893.11, divided into: Dredging, \$9,610,259.57; plant, shops, surveys, etc., \$6,007,633.54.

The number of cubic yards removed amounted to 85,160,875.

In the report of the Superintendent of the ship channel work, are several comparative tables showing the number of cubic yards dredged in each year, in connection with the $27\frac{1}{2}$ -foot and 30-foot channels, and the nature of the material moved in the several divisions of the channel.

In the same report is shown the length of the channel at 35 feet depth to be dredged, and the work that has been done. Requiring to be dredged, 90.38 miles; length of dredging done, 12.52 miles; to be dredged, 77.86 miles; cubic yards dredged, 10,969,956 in the 35-foot channel. The cost per cubic yard in different kinds of material and work by different dredges is contained in the same report. The total number of cubic yards dredged between Montreal and Quebec during the year was 4,743,294, at an average cost of $11\frac{1}{10}$ cents per cubic yard; the total number of cubic yards moved by the whole dredging fleet during the year was 6,929,344, at a total cost of \$663,229.74, or at the average rate of $9\frac{57}{100}$ cents per cubic foot.

The dredging fleet consisted of twelve dredges, sixteen tugs, five coal barges, two stone lifters, one rock cutter, one sounding scow, one lodging scow, one floating shop with living quarters for men, two winch scows and twenty-two for conveying dredged material, and one derrick scow.

The report of the Superintendent of the St. Lawrence river ship channel contains a report of Captain N. B. McLean respecting ice conditions in the St. Lawrence river between Montreal and Quebec, and the work of the icebreaking steamers *Montcalm* and *Lady Grey*. The latter steamer, belonging to the ship channel fleet, was detailed for the usual duty of helping vessels through the ice and assisting in the buoy service. No difficulty was experienced from ice by the last vessels clearing from Montreal. The last vessel to pass out was the steam barge *Samuel Marshall*, and this vessel was able to pass down the river to her destination and return

to Sorel before navigation closed. The months of December and January were mild, and the two icebreakers performed patrol work without difficulty. Throughout February the weather was exceptionally severe and ice formed rapidly.

The first ice jam at Cap Rouge, the narrow part, occurred on the 9th of February, the second, on the 23rd, and the third one on the 24th of the same month. The first jam was broken, but the second and third were so heavy that the two icebreakers were only able to get through by a narrow margin. The bridge formed and no attempt was made to break it. On March the 11th, the *Montcalm* began to work upwards from Lotbinière, and by the 28th March, the two steamers opened the bridge.

There are twelve private telephone stations used in signalling the movements of vessels passing up and going down the river. One Bell telephone line between Quebec and Crane island station. The international code of signals is used to communicate between vessels and the stations.

A semaphore was maintained at Des Chaillons to show the depth of water in Cap à la Roche dredged cut, and one at St. Nicholas to show the depth of water over the St. Augustin bar.

The greatest depth of water in the dredged channel was 40 feet 11 inches and the least depth, viz., in October, 31 feet 3 inches.

The report of the Superintendent of the St. Lawrence river ship channel, containing full and interesting details, forms Appendix 3 to this report.

SOREL SHIPYARD.

The work done at Sorel shipyard consisted principally of extensive and ordinary repairs to dredges, tugs and scows of the St. Lawrence river ship channel fleet and machinery, vessels connected with the construction and maintenance of lights, and vessels of the Public Works department.

The building of three dredges was completed; also one rock cutter, one coal barge, one steel dumping scow, one steel tug, one wooden tug, two wooden scows completed. Launched, an elevator dredge, one steel tug and one stone lifter and one testing scow, all to be completed. Fourteen tugs, five sounding scows, one rock cutter of the St. Lawrence river ship channel fleet were repaired; three steamers, two barges, buoys and moorings repaired for the Marine and Fisheries department and one heavy casting made for the Prescott buoy depot; ten vessels were repaired for the Public Works department; two launches and a coal barge were overhauled. Other repairs of a minor kind were made.

Several buildings of the yard were repaired and painted. Changes of an important nature were made in the system of conducting the work.

The expenditure, as shown by the statement of the Superintendent, for the fiscal year, was \$1,261,567.51, but this includes the cost of operating the dredging fleet in the St. Lawrence ship channel.

The report of the Superintendent of the shipyard, with the statement of expenditure in detail, forms an appendix to this report.

SESSIONAL PAPER No. 21

DOMINION STEAMERS.

The tonnage, dimensions, horse-power, etc., of the different steamers of the Marine branch are given under the heading of Dominion steamers, for reference. The movements of each steamer during the season of navigation are here recorded in order to show the subdivision of the service in which she is employed. Several of the steamers are employed most of the year round, doing special service during the winter.

An account is given of the periods in which they were employed and the time in which they were laid up for over-hauling and repairs.

The inspectors of hulls and machinery of Dominion steamers performed the work of inspection of these vessels, and made estimates of the amount of work to be done and, upon their recommendations, the repairs were put in hand. Mr. T. R. Ferguson was chief inspector of machinery for Dominion steamers in eastern waters, Mr. J. D. Stevens was assistant machinery inspector for the Maritime Provinces, and Mr. T. McConkey, ships-husband and inspector of hulls.

In British Columbia, the inspection was done by the general steamboat inspectors of hulls and machinery. The usual overhauling of vessels and repairs are made during winter to vessels at their winter quarters, but to vessels kept in commission the most suitable or available time is chosen.

QUEBEC DIVISION.

The 'Montcalm.'

The *Montcalm* is a powerful icebreaker, specially built for the St. Lawrence river service. She was built at Yokers, G.B., in 1904, is a twin screw steel vessel, 245 feet long, 40.6 feet wide and 15.7 feet deep; 526 net, 1,432 gross tonnage; 406 nominal and 4,250 indicated horse-power at a steam pressure of 220 pounds.

The *Montcalm* is in command of Captain E. Pelletier, carries a crew of 63 men, was engaged during summer in the lighthouse construction and supply service in the gulf and river St. Lawrence, strait of Belle Isle, Anticosti and Chaleur bay; and in winter at icebreaking and maintaining communication with Anticosti and Seven islands.

While breaking ice at Cap Rouge, on the 1st of April, she broke her propeller, damaged her rudder and, in consequence, went into dry dock for repairs.

She came out of dry dock on the 6th of July, left on the 19th on a supply trip to the strait of Belle Isle, with Dr. Barnes on board, who was making a test of his 'Microthermometer' in detecting, by means of water temperature, the approach of icebergs to vessels, at night or in fog. She returned to Quebec on the 17th of August, left on the 1st of September on a supply trip to the coasts of Anticosti, Gaspé and Chaleur bay, returning on the 24th. From the 21st of October to the 18th of November, she was on supply trip on the north shore to Anticosti, Bird Rock, Magdalen islands, Gaspé and Newfoundland; and on her return was kept in readiness to give protection and assistance to steamers and lifting buoys in the St. Lawrence, in conjunction with the *Montmagny* and *Druid*.

The cold wave which reached the St. Lawrence about the middle of November formed heavy ice on the river; and many vessels, being unable to cope with it, would

4 GEORGE V., A. 1914

have been frozen in but for the timely aid of the *Montcalm* from Montreal to the Traverse, which enabled them to go down in safety. For this valuable service acknowledgments were made.

From the 13th to the 31st of December, the *Montcalm* was in dry dock for overhaul and repairs, after which she was engaged in icebreaking and clearing the channel at Cap Rouge.

The *Montcalm* made two trips with mail and passengers to Seven islands, Anticosti and intermediate ports—the first from the 15th to the 21st January, and the second from the 1st to the 7th of March.

The 'Druid.'

The *Druid* is a single screw steel vessel, built in Paisley, Scotland, in 1902. She is 160 feet long, 30.1 feet wide, 12.5 feet deep; 149 net, 503 gross tonnage, and 59 horse-power.

She is in command of Captain Gagnon, carries a crew of 31 men, and sailed 13,903 miles during the season.

She is engaged in the buoy service from Platon to Father point, a distance of 185 milles; and is always kept ready to render service in towing lightships, placing and lighting buoys rendered defective either in position or light.

The 'Eureka.'

The *Eureka* is a single screw steel vessel, built in Glasgow, G.B., in 1893; is now in the pilot service at Father point.

She is in command of Captain J. B. Bélanger, and has a crew of 19 men.

She left Quebec early in the spring and returned late in the fall. She left her station on the 6th of December. She was put in winter quarters in Louise basin, where she was overhauled and put in good repair for the spring's operations.

She sailed 6,279 miles, boarded 1,096 steamers, 30 yachts and 15 barques.

'Rouville.'

The *Rouville* is a screw vessel, built in the Government shipyard, Sorel, P.Q., in 1906; is 125 feet long, 26 feet broad, 14.6 feet deep; 301 gross, 144 net tonnage; and 54 horse-power.

She is in command of Captain Cyprien Bossé, carries a crew of 20 men, and is generally used in connection with the supervision of the construction work of Quebec agency.

She replaced the *Champlain* on the Rivière Ouelle and Murray bay ferry while the latter was undergoing repairs, and made several trips to the strait of Belle Isle and Saguenay river for the Construction branch.

She was outfitted by the Quebec agency and wintered in Louise basin.

The 'Champlain.'

The *Champlain* is a screw steel vessel built in Paisley, Scotland, in 1904; is 120 feet long, 30.3 wide and 17.6 feet deep; 225 net, 522 gross tonnage, and 87 nominal horse-power.

SESSIONAL PAPER No. 21

She is in command of Captain René Pelletier, carries a crew of 28 men and is employed in the ferry service between Rivière Ouelle on the south shore and Murray bay, St. Irénée and Cap-à-l'Aigle on the north shore of the St. Lawrence river.

On this ferry, which is 11 miles wide, she made two round trips daily, except Sundays, transported 10,344 passengers, a large quantity of freight, supplied 1,206 meals to passengers, and earned \$8,932.60.

She was put in good repair in the spring and again in the fall before the beginning of the winter service.

The 'Montmagny.'

The '*Montmagny*' is a screw steel vessel built in Sorel, P.Q., in 1909, and is 212.6 feet long, 34.4 feet wide, 19.5 deep; 723 net, 1,296 gross tonnage, and 148 horse-power.

She is in command of Captain F. X. Pouliot, carries a crew of 48 men and is employed in the lighthouse construction and supply service in the river and gulf of St. Lawrence, strait of Belle Isle and Chaleur bay.

She sailed on the 13th May for the gulf of St. Lawrence, cruised there in search of bodies from the *Titanic*, and arrived from Halifax on the 10th July, having been employed by that agency all winter.

From the 20th to the 5th of October, sailed for St. Anthony for reindeer for Montmorency Falls museum, brought them to Quebec in safety, resumed her ordinary service, and on the 17th of November went to the relief of the *Royal George* passengers and crew. She opened the channel for the *Royal George* as far as Green island, sailed for Halifax on the 14th December, calling at Seven islands and Anticosti with provisions, reached Sidney on the 24th December; sailed for Halifax and was again employed, during winter, by that agency.

NOVA SCOTIA DISTRICT.

'Lady Laurier.'

The *Lady Laurier* is a twin screw steel vessel, 214.9 feet long, 34.2 feet wide, 17.2 feet deep; 413 net, 1,051 gross tonnage; and 186 nominal horse-power. She was built in Paisley, Scotland, in 1902, and is employed in the lighthouse and buoy service of this department in the Nova Scotia district.

At the beginning of the fiscal year, she was engaged at cape Sable, landing gasoline for the Marconi station, and was continuously employed in her regular work until the 1st of June, when she was laid up at Halifax for minor repairs to boilers and engines.

On the 11th, she sailed out of the harbour with the British delegates on board, returned to dockyard the 5th, was variously employed until the 21st July, when slight repairs to boilers and furnaces were made.

She sailed to Sable island on the 5th of August and continued work until the 15th, when she was injured by striking the stone pier at Grand Narrows. After landing supplies at different stations it was found advisable to lay her up for repairs at Halifax on the 24th August. Temporary repairs finished, she resumed work on the 3rd of September and continued until 24th November when she sailed in search of ss. *Morien*,

4 GEORGE V., A. 1914

and abandoned search on the 6th December. She remained at Halifax from the 10th to the 19th December, cleaning boilers and ship. She again resumed the buoy service until the 12th January, 1913, when she went to the assistance of ss. *Uranium*, ashore at Chebucto Head, took 600 passengers from the stranded steamer, landed them at Halifax and returned to stand by the ship; stood by her until the 16th when she sailed for Halifax, having Sambro gas buoy in tow.

The *Lady Laurier* continued landing supplies and attending to gas buoys almost continuously until the 5th of March, when she was laid up for extensive repairs to her hull. Important repairs were also made to the boilers and engines.

The vessel was placed on the marine slip at Halifax, and painted. She was on the marine slip at Halifax at the close of the fiscal year.

‘*Aberdeen.*’

The *Aberdeen* is a single screw steel vessel, built in Paisley, Scotland, in 1894, and is 180 feet long, 31.1 feet wide, 16.9 feet deep, 266 net, 671 gross tonnage, and 200 nominal horse-power.

She is employed in the Nova Scotia lighthouse and buoy service where she operated from the 1st of May, 1912, when she was laid up at Halifax dockyard for repairs until the close of the fiscal year.

Repairs were made to decks, plating, doors, steering and gear; officers' quarters were painted, decks caulked and plumbing and electric light repairs made.

NEW BRUNSWICK DIVISION.

‘*Lansdowne.*’

The *Lansdowne* is a wooden steamer, built at Maccan, N.S., in 1884; she is 188.6 feet long, 32.1 feet wide, 15.8 feet deep; 463 net, 680 gross tonnage, and 80 nominal horse-power.

This steamer is engaged in the lighthouse and buoy service under the direction of the New Brunswick agency.

From the 1st to the 12th of April, 1912, she was at Ballast wharf, St. John, cleaning, loading buoys and doing ordinary repairs. She then proceeded to Seal cove to place buoys, and was constantly employed in attending buoys and conveying supplies until the 6th of May, when she was hauled on Kennedy's slip to have engines and machinery examined. She was taken off the slip on the 8th, resumed ordinary services. She was placed on Hilyard's blocks for repairs on the 29th October, had hull caulked and otherwise thoroughly repaired and painted, and boilers and machinery repaired.

She was taken off the blocks on the 22nd of November and remained at Ballast wharf until 20th December, when she made a short detour to test new rudder, and returned to Ballast wharf where she remained until 1st January, 1913, the crew being variously employed the while. The balance of the fiscal year, she was constantly employed in her ordinary service.

‘*Stanley.*’

The *Stanley* is a single screw steel vessel built in Govan, G.B., in 1888, specially for winter navigation in the strait of Northumberland; she is 207.8 feet long, 32.0

SESSIONAL PAPER No. 21

feet wide, 17.9 feet deep; 394 net, 914 gross tonnage; 300 nominal horse-power and 2,100 indicated.

On the 1st of April, the *Stanley* was at Halifax and on the 4th was put on marine slip at Dartmouth for repairs.

She was taken off the slip on the 26th, her tanks cleaned and on the 2nd of May sailed for Shelburne. She continued ordinary service in Nova Scotia and New Brunswick waters until the 1st of June when she laid up at St. John, N.B., until the 24th. On the 25th she resumed work, returned to St. John on the 30th of June, remained there until the 29th July.

While at St. John, repairs were made to her main and auxiliary engines, saloon and officers' quarters painted; boilers cleaned; decks, doors, galley and lifeboat davits repaired. The *Stanley* sailed for north Sydney on the 31st July, arrived there on the 1st of August. Coal and supplies were here shipped and preparations made for the Hudson Bay voyage. She reached Port Burwell on the 12th August, anchored off Charles island on the 14th. On the following day, she sailed in snow and sleet, the wind blowing strong, sighted the *Minto* on the 19th and arrived at Port Nelson, the following day.

The Hon. Mr. Cochrane and party went aboard on the 23rd, and ship sailed for Fort Churchill, where she anchored on the following morning. The weather was mostly cloudy and wind high until Port Burwell on the return voyage was reached on the 29th of August. On the 3rd September reached North Sydney. She was employed under the Nova Scotia agency from the 6th to the 28th September, and continued to do lighthouse and buoy service until the 22nd of January, 1913, when she was docked at St. John for general repairs. The repairs completed, she sailed for Halifax on the 22nd of March, arrived on the 24th, left on the 25th for North Sydney, St. Paul island and the Magdalen islands, returning to North Sydney.

PRINCE EDWARD ISLAND DISTRICT.

'*Earl Grey.*'

The *Earl Grey* is a steel icebreaking passenger and freight steamer, designed by Mr. Charles Duguid, marine architect of the department of Marine and Fisheries, and built by Vickers Sons and Maxim, Barrow-in-Furness, G.B., for winter navigation in the strait of Northumberland to keep up steam communication between Prince Edward Island and the mainland.

She is 250 feet long, 47.7 feet wide and 24.1 feet deep. Her tonnage is 2,357 gross and 930 net, with a displacement of 3,340 tons; is fitted with wireless telegraph apparatus, and is classed 100 A1 at Lloyds.

The *Earl Grey* made an unsuccessful effort to open Charlottetown harbour, on the 1st of April, returned to Georgetown on the 2nd, remained on the Georgetown-Pictou route till the 6th, reached Charlottetown on the 9th and made regular trips there until the 17th, when she went ashore two miles off Tony river, Pictou island, in thick fog.

The *Minto* went to her relief, took passengers and mail to Pictou, made unsuccessful attempts to relieve her on the 19th; and on the 20th took off her baggage.

The *Brant* and *Lady Sybil* also went to her relief and she was towed off by the *W. Thomas* on the 23rd of April, and afterwards sent to Quebec for repairs.

A contract was let to the firm of George T. Davie & Son to make all necessary repairs according to specification furnished by this department, for the sum of \$18,435, the work to be done within forty working days.

She was taken out of Lévis dry dock on the 5th, transferred to the Naval department on the 12th July for His Royal Highness, the Governor General's cruise, returned to this department on the 27th August, sailed for Halifax, N.S., and was sent on an inspection cruise to Magdalen islands, St. Paul island, the gulf and river St. Lawrence, as far as the city of Quebec, where she arrived on the 23rd of September.

Repairs to hull, pipes, water tanks, engines, boilers and searchlight were made, and she began the winter service between Charlottetown and Pictou on the 24th of December; made round trips until the 27th, got wire cable tangled in propeller on the 28th, propeller released on the 30th and vessel continued the service until the 4th of January, 1913, when she was detained at Charlottetown on account of her firemen and trimmers striking. She sailed to Pictou on the 5th, was detained at Pictou on the 8th by snow storm, went on the Georgetown-Pictou route on the 11th, was there until 20th January; was on the Charlottetown-Pictou route from 21st January to the 3rd February; on the Georgetown route, on the 4th, on the Charlottetown route from the 6th to the 10th February, on the Georgetown route from 10th to 18th, when she resumed the Charlottetown route, where she plied at the expiration of the fiscal year.

The *Earl Grey* made 49 trips during the winter service between Prince Edward Island and the mainland, carried 2,145 first-class passengers, 1,194 second-class, 150,312 packages freight, weighing 7,163 tons 844 pounds, provided 1,509 meals and 1,164 berths to passengers.

Earnings—

From freight..	\$10,402 71
“ passengers..	4,200 00
“ meals..	150 90
“ berths..	1,164 00
<hr/>	
Total earnings..	\$15,917 61

The ‘Minto.’

The *Minto* is a single screw steel vessel built in Dundee, G.B., in 1899, specially for winter navigation in Northumberland strait, between Prince Edward Island and the mainland. She is 225 feet long, 32.7 feet wide, 18.3 feet deep; 372 net, 1,090 gross tonnage; 216 nominal and 2,900 indicated horse-power.

The *Minto* plied between Georgetown and Pictou from the 1st to the 6th of April, 1912, on the Charlottetown route from the 7th to the 15th. She made an unsuccessful effort to open Summerside harbour on the 15th, left on the 19th to assist the *Earl Grey*, ashore off Tony river, transferred baggage and mail from *Earl Grey*, sailed for Pictou on the 20th, landed baggage and mail at Pictou, sailed for Charlottetown and left there on the 22nd to again assist *Earl Grey*, and remained on the Georgetown route from the 23rd April to the 8th of May.

SESSIONAL PAPER No. 21

She was in the service of the Steam Navigation Company from the 20th to the 25th May, and on the 27th sailed for Halifax to fit out for trip to Hudson bay. She was put on the slip at Dartmouth on the 3rd of June, examined by Mr. Stevens, steamboat inspector, who reported that the steamer was seriously damaged by ice service.

Tenders, according to specifications, were asked, and the work was awarded Mr. N. Evans, of Dartmouth, N.S., for \$5,250, work to be completed in fourteen days.

The ship was fitted out for Hudson bay and on the 24th of July she sailed for Hudson bay in the service of the Naval department; returned to Halifax on the 11th of November, remained there undergoing repairs until the 6th of December, when she sailed for Charlottetown to prepare for winter service.

The *Minto* sailed for Summerside on the 20th December, plied between there and Tormentine until January 18th, sailed on the above date to Georgetown and, in conjunction with the *Earl Grey*, continued on the Georgetown-Pictou route till the 22nd of January, when she went on the Charlottetown route, where she plied until the 1st of February, when, on account of heavy ice, she was transferred to the Georgetown route on the 3rd of February, where she remained until the 25th of March, when she resumed the Charlottetown route, where she remained till the close of the fiscal year.

The *Minto* only lost one trip, on account of weather conditions.

The *Minto* made 70 trips, carried 101,232 packages of freight weighing 4,934 tons 839 pounds.

Earnings—

From passengers...	\$ 3,859 25
“ freight...	7,129 26
“ meals...	169 00
“ berths...	726 00
Total...	\$11,883 51

‘*Brant.*’

The *Brant* is a wooden vessel, built in Charlottetown, Prince Edward island, in 1899. She is 100.4 feet long, 19.1 feet wide, 8.5 feet deep; 58 net, 142 gross tonnage, and 33 horse-power.

The *Brant* was continuously employed in the lighthouse and buoy service during the fiscal year.

BRITISH COLUMBIA DISTRICT.

The ‘*Quadra.*’

The *Quadra* is a screw steel vessel, built in Paisley, Scotland, in 1891. She is 174.5 feet long, 31.1 feet wide, 13.6 feet deep; 265 net, 573 gross tonnage; and 120 horse-power.

She is in the lighthouse and buoy service in British Columbia waters and was at Esquimalt undergoing repairs at the beginning of the fiscal year to 30th of May;

4 GEORGE V., A. 1914

from 1st June to 12th July delivering supplies in northern waters and attending to buoys and beacons.

Taking 9½-foot gas buoy at Esquimalt, to replace Sandheads lightship, she brought lightship to Esquimalt, sailed to Victoria; cleaned up there, and on the 19th July to 6th September was on inspection trip under direction of Colonel Anderson, chief engineer of the department, and Captain Robertson.

For the balance of the fiscal year, she continued in the lighthouse and buoy service, landed machinery for the Naval department at Albert bay, and material for wireless telegraph at Iketa.

'Newington.'

The *Newington* is an iron screw vessel built in Hull, G.B., in 1889, and purchased by the department in 1908. She is 115.3 feet long, 21 feet wide, 11.5 feet deep; 61 net, 93 gross tonnage, and 58 horse-power.

The *Newington* was in the lighthouse and buoy service of British Columbia agency from the first of the fiscal year to the 1st of July, when she was transferred to the Naval department to be used as a fishery cruiser.

'Leebro.'

The *Leebro* was chartered by the department of Marine and Fisheries at the beginning of the fiscal year, and remained in the service till the 31st March, 1913.

She was engaged in the lighthouse and buoy service in British Columbia waters from the 1st of June to the last of the fiscal year.

The 'Granier.'

The *Granier* was chartered by the department, and was in the light and buoy service of the British Columbia agency from the 1st of July, 1912, to the 31st of October, when her cylinder cover burst, causing damage to her machinery, and being in consequence rendered unfit to continue her work, she was returned to her owners.

'Estevan.'

The *Estevan* is a twin screw steel vessel built in Collingwood, Ontario, in 1912, and is 212 feet long, 38 feet wide, 15.3 feet deep; 1,161.42 gross, 606.61 net tonnage.

She has two Scotch type steel boilers, sustaining a load pressure of 180 pounds to the square inch, two steel triple expansion engines, the three cylinders 15, 25½, 42 inches diameter, and 26-inch stroke, which develop 174 nominal horse-power; guaranteed speed 12 knots an hour.

Her main deck is covered with steel plates; and she is supplied with steam steel derrick, capstan winches and heating plant, electric lights and bells, telephone and wireless telegraph apparatus.

Her two staterooms and cabins are pannelled in yellow pine, enamelled white, and all the officers' and seamen's quarters furnished in the latest approved manner, and the vessel is classed at Lloyd's 100 A1.

She was delivered by the builders to the British Columbia agency of this department, on the 15th of March, 1913, but was not in service during the balance of the fiscal year.

SESSIONAL PAPER No. 21

MONTREAL DIVISION.

'Maisonneuve.'

The *'Maisonneuve'* is a wooden steamer, built in Smith Falls, Ontario, in 1894, is 75.7 feet long, 9.7 feet wide, 7.3 feet deep; 18 net, 26 gross tonnage; and 9 horse-power.

She is in the lighthouse and buoy service of the Montreal agency.

'Verchères.'

The tug *Verchères* was in the Montreal lighthouse and buoy service during the year.

She was repaired and cleaned, costing \$1,563.59.

'Shamrock.'

The *Shamrock* is a single screw wooden vessel, built in Quebec in 1898, is 117.3 feet long, 25 feet wide, 9.7 feet deep; 237 gross, 161 net tonnage, and 61 horse-power.

She is employed under the control of the Montreal agency.

Repairs and supplies cost \$4,901.52.

The 'Acetylene.'

The *Acetylene* is generally employed attending the gas buoys under the control of Montreal agency.

'Dollard.'

The *Dollard* is a twin screw steel vessel built in Kingston, Ontario, by the Collingwood Shipbuilding Co. Ltd., in 1912, and is 170 feet long, 31.6 feet wide, 15.6 feet deep. She is furnished with two steel boilers, Scotch type, of 180 pounds to the square inch loaded pressure capacity, with furnaces fitted to burn coal or oil fuel and two triple expansion engines, the cylinders of which are 12½, 21, and 34 inches diameter, respectively, and 21-inch stroke. She was in service during the fiscal year 1912-13.

ONTARIO DISTRICT.

The 'Scout.'

The *Scout* is a wooden, single screw vessel of 27 horse-power. She is 103.6 feet long, 25.6 feet wide, 9.2 feet deep; 70 net, 176 gross tonnage; and was employed in the lighthouse and buoy service in the upper St. Lawrence river.

Her hull, engines and machinery had been inspected and temporary repairs made at Prescott.

The 'Simcoe.'

The *Simcoe* is a steel twin screw vessel of 217 nominal horse-power, built by Swan, Hunter and Wingham, Richardson, Ltd., Newcastle-on-Tyne, G.B., in 1909, and is 180 feet long, 35.2 feet wide, 15.5 feet deep; 913 gross and 438 net register tonnage.

4 GEORGE V., A. 1914

She is employed in the lighthouse and buoy service on the great lakes and Georgian bay.

The *Simcoe* left Parry Sound on the 3rd of June, having previously been cleaned and some parts painted. She was continuously employed in the lighthouse and buoy service on the great lakes and Georgian bay until October 16th, when she was put in dry dock at Collingwood, where certain repairs were made, tanks were scraped, decks cleaned, smoke-stack, derricks and white work painted.

She left dry dock on the 23rd and continued the lighthouse and buoy service until the 16th November, when she laid up at Midland.

Her hull was inspected by Mr. McConkey, ships' husband; and engines, boilers and machinery by Mr. Ferguson, steamboat inspector, on March 13, 1913; both of whom recommended that certain defects be remedied, and steps were taken before the close of the fiscal year by the department to do so.

'Lambton.'

The *Lambton* is a single screw steel vessel of 89 horse-power, built in Sorel, P.Q., in 1909; is 108 feet long, 25.1 feet wide, 12.7 feet deep; 324 gross and 182 net tonnage.

The *Lambton* is in the lighthouse and buoys construction and superintendence service, under the direction of the Chief Engineer's branch.

After having been repaired, cleaned and fitted out, she left Prescott on the 7th June, 1912, and continued carrying building materials, charging, placing gas buoys and carrying construction crews to the different stations until the 28th September, 1912, when she laid up at Parry Sound, until the 15th of October. She then continued work until the 15th December, when she was laid up for winter at Midland.

METEOROLOGICAL SERVICE.

The work of the Meteorological service, in all its branches, has increased in extent and usefulness during the year. The number of persons receiving pay was 304. Of this number 35 were employed in the head office. Sixty-two new stations were built, 22 in British Columbia, 16 in Alberta, 6 in Saskatchewan, 2 in Manitoba, 10 in Ontario, 3 in Quebec, 1 in New Brunswick, 2 in Nova Scotia.

Reports were received from 577 stations in the Dominion, Newfoundland and Bermuda. Reports were received at the head office twice a day from 45 stations; and 97 outlying stations make observations of a valuable nature, transmit them to the head office and the officers receive some remuneration. In western Canada, special observations were taken, telegraphed to Toronto, from whence daily bulletins were issued and distributed for the information of the public.

The number of storm warnings issued from the head office was 2,296, and storm signals were shown in 111 places.

Of these predictions 95.2 per cent were verified; and the appreciation of the public is evinced by the eagerness and confidence with which the warnings are received and consulted.

The Physics branch has continued very valuable scientific investigations in the upper air; 291 balloons, carrying meteorographs, were sent up from Woodstock,

SESSIONAL PAPER No. 21

Ontario, between the 1st of January, 1912, and the 31st of March last. Of these 14 have been recovered. The lowest record was 5.8 and the highest 11.7 miles; and the greatest distance travelled from starting point, 490 miles. The report of the Director states that the ballons, in all cases, reached the isothermal layer and penetrated sufficiently far into it to show satisfactorily the constancy of its temperature. The results are given, in a concise and complete table appended to the Director's report.

The kite station at Agincourt was kept in operation during the year and the highest point reached was 6,750 feet above sea-level.

Solar observations were continued, but at great disadvantage owing to cloudy weather.

Time was sent by telegraph and telephone, to all inquiries; chronometers and watches compared and corrected. Time exchanges between Toronto, Montreal, Quebec and St. John, N.B., were recorded on the chronographs, and errors of clocks computed.

Magnetic observations at Agincourt were continued. Declination, inclination and horizontal force, computed; 92 theodolites compared with the standard declino-meters, index corrections determined and supplied to the Surveyor General.

The seismographs at Toronto and Victoria have recorded more than the usual number of earth tremors; Victoria recording 150, Toronto 157 disturbances. Tabulated records of them were furnished to many scientific societies.

The Director reports that at St. John, N.B., uninterrupted observations were made, no important changes effected, instruments in good order, reports of observations regularly telegraphed to Toronto; that the Point Lepreaux wind station continues useful work; that the demand for weather bulletins continues to increase; that their distribution to newspapers and centres was carried on with dispatch, the storm warnings from Toronto telegraphed and telephoned to different places, and daily reports posted in prominent places.

Observations were taken, when favourable conditions prevailed, errors of the standard sidereal clock determined by the transit micrometer and recorded; the Rifler and Kullberg clocks give good results. Clocks in an increasing number are being synchronized, an electric clock installed by the department of Public Works in the tower of the Fairville post office connected and synchronized.

Time signals are automatically transmitted over the Western Union wires by the transmitting clock and by wireless telegraph. At Camperdown to ships equipped with wireless telegraph instruments and the Nova Scotia Telephone Co., receives signals for Halifax clock.

The observatory property at Quebec was transferred to the National Battlefield Commission, only a parcel of land 300 by 200 feet around the building being retained.

The bi-hourly temperature records were discontinued on the 8th of December and replaced by thermograph record.

The noon gun was placed on top of the wall facing the main entrance to the citadel, where it is heard all over the city.

Chronometers and surveyors' watches were rated, statistics given to the public, a storm signal mast erected on the summit of 'Point l'Islet' near the entrance of the Saguenay river, and a sunshine recorder placed in position at the Ste. Anne de la Pocatière experimental farm.

MONTREAL HARBOUR COMMISSION.

The Harbour Commissioners reported for the year 1912. These commissioners were Major G. W. Stephens, L. E. Geoffrion and C. C. Ballantyne, Esquires, who resigned and William G. Ross, Farquhar Robertson and E. D. Labelle, Esquires, were appointed as the new board by Order in Council of the 24th of December, 1912.

On the 24th December, 1912, Captain L. A. Demers was appointed harbour master, the Hon. James McShane being retired; and Mr. J. A. Massé assumed the duties of yard superintendent.

Navigation opened on the 23rd of April. The first vessel from sea arrived at port on the 30th of April; and the last vessel for sea left 3rd December.

The total number of vessels which arrived in the port during the year was 13,322, having a total tonnage of 7,053,691 tons—an increase of 890 vessels and 441,420 tons over that of 1911. Of this number 409 were trans-Atlantic, with a tonnage of 1,775,487 tons; 327 Maritime Provinces vessels, with a tonnage of 628,437 tons, and 12,586 inland vessels, with 4,649,767 tons.

Grain elevator No. 2 was formally opened. This elevator has a storage capacity of 2,622,000 bushels at present, but ultimately it will be possible to store 2,000,000 bushels more. The building is fire proof and of the most modern design; the machinery for handling the full storage capacity has been installed, and marine legs for discharging grain from vessels are part of the construction. Grain elevator No. 1 was also in operation, as well as the floating elevators and the Grand Trunk elevator, all affording facilities for unloading grain from lake vessels and cars and loading into ocean-going vessels. The special advantage of the grain conveyer system, showing that vessels can be loaded from grain elevators Nos. 1 and 2 at nineteen different berths at the piers and quays, and the amount of grain that can be delivered to vessels per hour, are all described in the report of the commissioners.

Another special feature of the harbour improvements was the completion of the floating dry dock owned and operated by the Canadian Vickers, Ltd. This dock was formally opened by His Royal Highness, the Duke of Connaught, Governor General of Canada, in the presence of 2,000 prominent citizens. The site of thirty acres was provided by the commissioners. Other important new work was the addition of a new floating compressed air derrick, completion of new offices for the commissioners and staff, increase of dredging plant, tugs, scows, fire protection, wharf sheds and loading and discharging equipment. The purchase of additional property was effected and an extension made of the harbour commissioners' traffic tracks and cars for transporting freight along the harbour front from the railroad terminals to vessels, and vice versa.

The receipts and expenditure in connection with capital and revenue accounts were as follows:—

RECEIPTS AND EXPENDITURE.

The receipts on revenue account were \$1,049,311.50—an increase of \$137,056.

The expenditure on revenue account was \$1,108,804.95—an increase of \$224,734.66.

SESSIONAL PAPER No. 21

CAPITAL ACCOUNT.

<i>Receipts.</i> —From Dominion Government.....	\$2,460,000 00
“ “ “	515,000 00
	<hr/>
	\$2,975,000 00
<i>Expenditure.</i> —On capital account.....	\$2,988,253 22

The debenture debt on the 31st December, 1912, was \$19,582,000, of which \$1,872,000 is to the public and \$17,710,000, to the Dominion Government, upon which interest at the rate of 3.34 per cent is paid.

The Harbour Commissioners report forms an appendix to this report.

QUEBEC HARBOUR COMMISSION.

By an Act of Parliament, 2 George the V, chapter 44, entitled ‘An Act to amend the Quebec Harbour Commissioners Act, 1899,’ a number of sections of the old Act were repealed and the number of commissioners for the harbour reduced.

The amended Act went into force by proclamation of the Governor General in October, 1912, and the former commissioners automatically ceased to be in office. The former board consisted of Victor Chateauvert, chairman; Lorne C. Webster, W. M. Dobell, S. C. Auger, W. A. Marsh, J. B. E. Letellier, and John S. Thom, Esquires. By Order in Council of the 18th of October, 1912, William Price, J. B. E. Letellier and A. T. Gravel, Esquires, were appointed as the new commissioners.

During the year 797 ocean and sea-going steamers were berthed at the break-water, Point-à-Carey wharf and Louise docks, and 423 vessels at the St. Charles docks and wharfs.

A contract was entered into for the construction of a grain elevator with capacity for storing one million bushels, on Princess Louise Embankment. Three locomotives for switching cars on the commissioners’ harbour tracks have been ordered, a new car ferry dock is under construction, two additional modern freight sheds, an immigrant building and new offices for the commissioners and staff were begun. Additional railway tracks for moving freight have been built and a contract entered into for a 50-ton loading crane. Other extensive improvements have been made in the harbour property and new facilities introduced for the more efficient handling of freight.

The revenue for the year was \$126,131.39, and the expenditure on this account, \$123,954.60. The expenditure on capital account was \$141,002.10.

The report of the Commissioners forms an appendix to this report.

THREE RIVERS HARBOUR COMMISSION.

The ocean-going vessels at this port numbered 51, having a total tonnage of 121,513 tons inwards and outwards. The United States shipping amounted to 612 vessels, with a tonnage of 77,536 registered tons. The inland traffic amounted to 464 vessels, with 92,887 tons.

The receipts for the year were \$42,833.83; the expenditure, \$18,114.21; and balance on hand, \$24,719.62.

The report of the Commissioners forms an appendix to this report.

4 GEORGE V., A. 1914

BELLEVILLE, ONT., HARBOUR COMMISSION.

The imports for 1912 consist of 19,432 tons coal, 889 tons merchandise, 523 barrels of oil, and 155,000 feet of lumber; the exports, 10,000 shingles, 6,000 feet lumber, 1,370 tons merchandise, and 1,015½ tons cheese.

The balance on hand from 1911 was \$138.72; the receipts for the year 1912, \$2,266.70; or a total of \$2,404.42.

The expenditure was \$1,952.49, and the balance on hand, \$451.93.

The amount to the credit of the sinking fund at the end of 1912 was \$4,137.36.

The report of the Harbour Commissioners forms an appendix to this report.

TORONTO HARBOUR COMMISSION.

By 'Toronto Harbour Commissioners' Act, 1911,' the former commission, as such, ceased and a new commission, composed of Messrs. Lionel H. Clarke, chairman; F. S. Spence, R. Hame Smith, R. S. Gamley and Thomas L. Church, commissioners, was appointed. Mr. Colin W. Postlethwaithe, harbour master; Mr. J. G. Sing, consulting engineer; Mr. E. L. Cousins, chief engineer; and Mr. Alex. C. Lewis, secretary.

New rules and regulations were made and approved by the Governor General in Council, and by authority of an Act of the Ontario legislature, the city of Toronto transferred to the commission, Ashbridge bay district and other water-front properties.

Interesting and instructive details of organization surveys, 'Industrial district,' and future development plans form the greater part of the report.

The harbour was open until the 6th of January and re-opened on the 16th of April, being closed 111 days.

The number of vessels which arrived during the season was 3,514—an increase of 322 over those of last year. Of this number 3,207 were steamers and 307 sailing vessels. The total registered tonnage was 1,831,550—an increase of 181,663 registered tons, notwithstanding a decrease of 104 sailing vessels.

The new western channel was opened and lighthouses erected, the lights at the old channel being discontinued as the route is now little used.

Good progress has been made by the Engineering branch in making surveys, establishing bench marks and making plans. The elevation of Toronto harbour above mean sea-level of New York harbour was determined as 245 feet.

The receipts from all sources for the calendar year amounted to \$75,809.47; the expenditure on ordinary account, \$74,604.31; and on capital account, \$37,423.42.

The value of harbour commission property and capital is \$8,858,778.93.

The Harbour Commissioners' report in full forms an appendix to this report.

PICTOU, N.S., HARBOUR COMMISSION.

The balance on hand from previous year was \$435.86; harbour dues, \$374.20; or a total of \$810.06.

The expenditure was \$78.50, leaving a balance on hand at the end of 1912, of \$731.56.

SESSIONAL PAPER No. 21

No account has been given by the commissioners of the shipping at the port during the year. A new system will be adopted with regard to furnishing the tonnage of shipping. The report of the Chairman, D. Sutherland, and the Secretary, form an appendix to this report.

NORTH SYDNEY HARBOUR COMMISSION.

The commissioners built a block, partly to replace old blocks that had been carried away by the sea, and to make a substantial head to the pier, and repaired the break-water at a total cost of \$2,965.

The number of sailing vessels which entered for the year was 798, and of steamers 537; total, 1,335; the total tonnage was 391,236. The principal export was coal, and import, iron ore; the increase of export of coal over the previous year was 15,000 tons.

The receipts on revenue account were \$5,619.64 and expenditure, \$5,005.60.

The report of the Harbour Commissioners forms an appendix to this report.

STEAMBOAT INSPECTION.

Important changes in connection with the Board of Steamboat Inspection took place during the fiscal year. Mr. Edward Adams, who was appointed chairman in 1894, resigned from the Board on August 1, 1912. Mr. Dodds, deputy chairman acted as chairman until incapacitated by illness, and then Mr. William Laurie held the position of deputy chairman. Mr. J. A. Thompson, who had been inspector of boilers and machinery at Victoria, B.C., died; the service of Mr. J. C. Kinghorn, inspector of hulls of Vancouver terminated in November, 1912.

Mr. Frank Macdonell was appointed assistant chairman of the Board on the 1st of October, 1912. Mr. Bert Mantrop was appointed inspector of boilers and machinery, and Mr. F. F. Pickard, inspector of hulls, for the Victoria, B.C., district; Mr. J. E. Lunan, inspector of boilers and machinery for the Montreal district in room of Mr. Arpin, resigned; Mr. Adams McDougall was appointed inspector of hulls and equipment for the Halifax district. For the Kenora district, Mr. W. J. Vigars was appointed an additional inspector of boilers and machinery.

Board meetings were held at Ottawa, Toronto and Halifax, but principally in Ottawa. The prosecutions for violation of the law and casualties to steamers are enumerated in the Chairman's report.

One thousand seven hundred and ninety-six steamers registered in Canada were inspected; gross tonnage, 474,828. Number of vessels not registered in Canada, 183; gross tonnage, 280,164. Total fees collected, \$4,721; and expenditure, \$54,147.50.

LIST OF INSPECTORS.

Boilers and Machinery.

N. A. Currie, Halifax, N.S.
C. E. Dalton, St. John, N.B.
J. H. Fontaine, Quebec, Que.
F. X. Hamelin, Sorel, P.Q.
W. Laurie, Montreal, Que.
J. E. Lunan, Montreal, Que.
T. P. Thompson, Kingston, Ont.
J. Dodds, Toronto, Ont.
J. B. Stewart, Toronto, Ont.

G. M. Arnold, Toronto, Ont.
E. W. McKean, Collingwood, Ont.
W. J. Vigars, Port Arthur, Ont.
G. P. Phillips, Kenora, Ont.
B. Mantrop, Victoria, B.C.
W. J. Cullum, Victoria, B.C.
H. G. Robinson, Vancouver, B.C.
A. E. Hopper, Vancouver, B.C.

Hull Inspectors.

A. McDougall, Halifax, N.S.
I. J. Olive, St. John, N.B.
P. Duclos, Quebec, Que.
M. R. Davis, Kingston, Ont.

W. Evans, Toronto, Ont.
S. D. Andrews, Collingwood, Ont.
F. F. Pickard, Victoria, B.C.

LIFE-SAVING SERVICE.

Inspection of the different stations took place during the year.

There are 40 life-saving stations in Canada—4 in New Brunswick, 16 in Nova Scotia, 5 in Prince Edward Island, 4 in British Columbia, and 11 in Ontario.

New stations, begun last year at Cheticamp and Bay View, in Nova Scotia, were completed and fully equipped in 1912. At the former a look-out tower was erected and a twin-screw Beebe-McLellan selfbailing boat, 25 feet long and 8 horse-power, was provided and manned by a crew of coxswain, engineer and four men. Two additional men for the look-out tower were appointed.

The latter is provided with coxswain, mate, engineer and five men; a 36 feet, 45 horse-power, self-righting, self-bailing Bayonne lifeboat and all other life-saving appliances in general use.

New stations have also been established at Cascumpeque, P.E.I., and at Cape Tormentine, N.B., and many necessary improvements made to established stations.

The returns show that thirteen stations made 136 trips in efforts to save life, that two reported several trips, that six stations reported 147 lives saved, that five stations reported 5 crews rescued, that 24 persons were presented with medals, watches or binocular glasses, as rewards for saving lives. The sum of \$95,843.83 was spent in life-saving service and equipment.

A full report forms an appendix to this report.

WRECKS AND CASUALTIES INVESTIGATIONS.

The report of Commander H. S. G. Lindsay, wreck commissioner, forms an appendix to this report, and furnishes information respecting investigations into causes of wrecks and casualties in Canadian waters, and the decisions of preliminary and formal investigations, as well as a list of wrecks and casualties of sea-going vessels, and vessels sailing in inland waters.

Investigations were held into the cause of fifty wrecks or casualties in Canadian waters—thirty-four formal, one departmental, and twenty-one preliminary, two investigations having been held on six cases. There were twelve masters' or mates' certificates suspended for various dates on account of neglect of duty or incompetence, twenty censured, two masters reported to foreign authorities for action, sixteen officers exonerated, one pilot found guilty of gross negligence and reported to his pilotage authority for action, one pilots' certificate was suspended and three pilots censured. No decision was given in three cases.

WRECKS AND CASUALTIES OF SEA-GOING VESSELS REPORTED.

The number of sea-going vessels reported as totally wrecked is thirty-eight, the amount of loss in six cases not given. The amount of loss reported is \$567,570.34.

The number of sea-going vessels partially wrecked is ninety-two, the amount of loss reported being \$178,789; but twenty vessels of the above number were slightly injured or stranded, suffering little or no loss in consequence.

The total sea-going casualties, therefore, was 239 vessels, the total loss \$746,359.34, and the loss of life 25.

In inland waters the number of vessels reported as totally wrecked is 20, the amount \$318,226, the amount of loss not given of three wrecks.

The number which reported partial loss, is ten vessels; loss, \$54,285; but twenty-five more were slightly injured, stranded or suffered no damage and reported no loss.

The total casualties, therefore, in inland waters, was fifty-five vessels; the amount, \$372,311; and the loss of thirty-four lives.

The grand total loss reported is 294 vessels, \$1,118,670.34 and fifty-nine lives.

WRECKING PLANT.

The contract with George T. Davie & Sons, of Levis, P.Q., having terminated, the Department entered into a contract with the Quebec Salvage Company, Limited, Levis, P.Q., to maintain a wrecking plant on the river and gulf of St. Lawrence for a period of five years for the yearly subsidy of \$25,000 per annum paid half yearly by the department. The department participates in profits after certain expenses are paid.

The usual subsidy of \$10,000 has been paid to the British Columbia Salvage Company, Limited, and a report of the salvage effected by the two companies follows:

QUEBEC SALVAGE AND WRECKING COMPANY, LIMITED.

Subject: The services rendered by the plant of Quebec Salvage and Wrecking Company Limited, from 1st April, 1912, till 31st March, 1913.

May 24th.—s.s. Lord Strathcona assisted s.s. Ultonia from Quebec to below Traverse.

July 27-29th.—s.s. Lord Strathcona went to assistance of s.s. Empress of Britain but found vessel did not require her service.

September 21-25th.—s.s. Lord Strathcona went to assistance of steam barge Zapotec stranded on North Shore. Floated her off and brought her to graving dock, Levis.

October 6-13th.—s.s. Strathcona went to assistance of s.s. Bengore Head in Strait of Belle Isle. Found vessel afloat, and accompanied her to Quebec.

October 18-19th.—s.s. Lord Strathcona went to assistance of steam barge Omaha and floated her.

4 GEORGE V., A. 1914

October 31-26th November.—Went with plant to assistance of s.s. Bellona, stranded at Lower Traverse. Floated her and brought her to Louise Basin, Quebec.

November 29-7th December.—Went to assistance of s.s. Royal George, stranded at St. Laurent point. Floated her and brought to Quebec.

December 2nd.—s.s. Lord Strathcona successfully towed off s.s. Gladstone, stranded at St. Laurent point.

BRITISH COLUMBIA SALVAGE COMPANY, LIMITED.

April 2-9th.—Salvor went to assistance of s.s. Cheloshin, ashore at the North Pacific Cannery's wharf, Skeena river.

May 20-22nd.—Salvor called to assistance of s.s. Prince John, ashore at Massett inlet.

August 24 to December 10th.—Salvor raising s.s. Newport, sunk at Balboa, Panama Canal Zone

October 16.—Assistance rendered to c.s. Restorer, whose bunkers were on fire in Esquimalt harbour.

(1912.)

December 2nd.—Maude went to assistance of s.s. County of Linlithgow, ashore off Otter point, Vancouver island, B.S.

December 16.—Maude went to assistance of tug Nidge, ashore on Macauley point.

December 31.—Called to assistance of four coal barges in Esquimalt harbour.
(1913.)

January 7 to February 5.—Salvor and Maude raising s.s. Cheslakee, sunk at Van Anda, B.C.

January 10-18th.—Maude assisting s.s. Gifford, ashore in Canoe Pass, Fraser River, B.C.

SICK AND DISTRESSED MARINERS.

Under the provisions of the Canada Shipping Act, chapter 113, part 5, s. 384, R.S., dues of 1½ cents per ton, registered tonnage, are levied on every vessel entering any port of the provinces of Quebec, Nova Scotia, New Brunswick, Prince Edward Island and British Columbia. The money thus collected forms the 'Sick Mariners Fund.' Vessels of the burden of 100 tons and less pay duty once in each calendar year, and vessels of more than 100 tons, registered tonnage, three times in each year.

The officers and seamen of all fishing vessels not registered in Canada do not pay sick mariners dues nor participate in the benefits accruing therefrom, but such vessels registered in Canada, may pay dues and participate in the benefits; and if of more than 100 tons, only for the voyage at the beginning of which payment has been made; such vessels shall enjoy the same rights and benefits as are enjoyed by vessels which pay dues and are not engaged in fishing.

The Act, Chapter 113, Canadian Shipping, does not apply to the province of Ontario, so no dues are collected from vessels in that province.

SESSIONAL PAPER No. 21

At the port of Quebec sick mariners are cared for at the Jeffery Hale and the Hôtel Dieu hospitals at a per diem allowance of \$1.50 per seaman, including medical attendance and board.

At the port of Montreal sick seamen are cared for at the General hospital and at the Notre Dame hospital—the charge per diem at each institution being \$1.50 per seaman, including board and medical attendance; and infectious cases are attended at the Alexandra hospital.

At the port of Three Rivers, sick mariners are cared for at the St. Joseph's hospital, at a per diem rate of 90 cents for each seaman. The medical officer receives \$300 per annum for his services.

At the port of Chicoutimi, P.Q., sick seamen are cared for at the hospital of St. Valier, at a per diem charge of \$1.20 per seaman, including board and medical attendance.

At the port of St. Johns, P.Q., sick seamen are attended at the St. John hospital, at a cost of 90 cents a day. The medical officer receives a salary of \$600 a year.

Marine hospitals are maintained at Louisburg, Yarmouth, Sydney and Lunenburg in the province of Nova Scotia; and sick seamen at Halifax, N.S., are cared for in Victoria General hospital at \$1.50 a man per day, including board and medical attendance.

At Pictou, sick seamen receive treatment at the Pictou Cottage hospital at a per diem rate of \$1. The medical superintendent is paid a yearly salary of \$400.

At North Sydney, sick seamen are attended at the Hamilton hospital at \$1 per day each. The medical officer receives \$750 per annum for drugs and medical attendance.

At Windsor, N.S., sick mariners receive treatment at the Payzant Memorial hospital at \$5 per week for each man. The medical officer receives a salary of \$120 a year.

At Amherst, N.S., sick mariners are cared for at the Highland View hospital for \$4.50 a week each.

Sick seamen of Parrsborough, N.S., are cared for at the Cottage hospital, Springhill, N.S., for 90 cents each per day.

At Victoria, B.C., sick seamen are treated at the St. Joseph hospital for \$1.40 each per day. The medical officer receives a salary of \$600 per annum.

At Vancouver, B.C., sick seamen are attended at St. Paul hospital for \$1.50 per day each.

At Nanaimo, B.C., sick seamen are treated at the Nanaimo hospital for \$1 per day, board, lodging and nursing. The medical officer receives \$600 per annum.

At New Westminster, sick seamen are attended at the Royal Columbian hospital for \$1 a day, including board and medical attendance.

At Chemainus, B.C., sick seamen are attended at the General hospital for \$1 a day, the medical officer receiving \$400 per annum.

At St. John, N.B., sick seamen are treated at the General Public Commissioners' hospital for \$1.50 per day.

At Campbellton, N.B., sick seamen are treated at the Hôtel Dieu hospital for \$5 a week each, the medical officer receiving a salary of \$350 per annum.

At Moncton, N.B., sick seamen are treated at the Moncton hospital for \$4 a week, the medical officer receiving a salary of \$200 per annum.

4 GEORGE V., A. 1914

A marine hospital is operated and maintained by the department at Douglastown, N.B., the medical officer receiving a salary of \$400 and the keeper \$250 per annum.

Where no hospital is maintained in any part of the Maritime Provinces, Quebec or British Columbia, the Collectors of Customs are authorized to care for sick seamen entitled to receive the benefits of the fund.

Statement of receipts and expenditure on account of 'Sick and Distressed Seamen' from the fiscal year 1900 to 1912, both inclusive:—

Year.	Receipts.	Expenditure.
1900..	\$59,971 84	\$32,743 30
1901..	59,783 34	34,944 93
1902..	65,853 83	51,827 12
1903..	64,851 55	48,151 48
1904..	61,778 29	50,801 78
1905..	58,372 34	51,000 18
1906..	60,183 90	50,120 42
1907..	44,704 59	34,362 11
1908..	69,364 45	59,957 92
1909..	53,732 31	66,349 26
1910..	55,567 41	54,859 50
1911..	60,637 11	54,779 27
1912..	63,663 41	52,172 75

The total amount of salaries paid to medical officers during the year 1912-13 was \$14,509.60. The number of seamen treated was 3,187, being 175 more than the number treated in 1911-12, while the number of days treatment was 22,865. The number of vessels which paid sick mariners' dues was 3,191, and the number which received benefits, 1,118.

The report of Dr. C. H. Godin, Medical Superintendent of Marine Hospitals, forms an appendix to this report.

CORRESPONDENCE AND RECORDS BRANCH.

The Records branch of the department embraces the receiving and despatching of letters. The letters and telegrams received are registered, numbered, stamped with date received, indexed, placed on files, and the files charged and distributed to the officers who take action upon the letters and telegrams. Copies of letters are placed upon the files, and the files examined to ascertain if all letters have been answered or acknowledged, and then they are discharged and placed in receptacles.

The registering of letters consists of entering the number of the file and a brief synopsis of the subject of the letter; the indexing includes pages of personal names in a book, and the card system, locality names, subjects and vessel names. The number of communications received during the year 1912-13 was 54,853.

The letters and telegrams despatched are copied in letter press books and indexed. The number of letters despatched during the year was 43,000. The increase in the numbers of letters received and despatched during the last ten years shows the growth of the work of the department and consequent increase of staff, as a whole, including

SESSIONAL PAPER No. 21

the Records branch. An establishment book is maintained in this branch in which the names of all employees of the department are recorded.

The letters received in 1901 numbered 18,741; and despatched, 13,000; while in the past year 54,853 were received and 43,000 despatched.

NAVIGATION SCHOOLS.

The following tabulated statement shows where the schools were held, the total number of lectures delivered and the total attendance at each:—

Place.	Total No. of Lectures.	Total Attendance.
Collingwood, Ont.	32	361
Halifax, N.S.	5	
Quebec, P.Q.	43	753
North Sydney, N.S.	30	242
Vancouver, B.C.	15	178
Yarmouth, N.S.	30	161
	155	1,695

There was one lecture and thirty-eight in total attendance less than during the previous year which is accounted for by the illness of Captain Lugor, of Halifax, which disorganized that school. A noticeable increase in attendance occurred in the eastern schools, while the total daily attendance at Vancouver fell from 707 last year to 161 in 1912.

LIVE STOCK SHIPMENTS.

The Montreal inspector of live stock shipments reports 178 sheep, 6,469 cattle, 175 horses, 314 U.S. mules and 106 U.S. cattle shipped. The last are included in the number of cattle shipped.

The appointment of St. John, N.B., live stock inspector was cancelled on the 1st of February, 1913; and the agent reports that he knows of no shipments being made during the year.

SABLE ISLAND HUMANE INSTITUTION.

The report of the superintendent was forwarded as usual by the agent of the department at Halifax.

On the 14th of August, the ss. *Erie*, of Cardiff, G.B., was wrecked one mile east of the main station, in a dense fog. Little of her cargo of maize was saved. The steamer sank on the 20th, and the life-boats of the station made three trips for the crew, all of whom were saved.

Repairs were made to buildings, the old illuminating apparatus replaced by 55 M.M. Diamond Vapour lamp.

The stock on hand and the number killed were the same as on the previous year.

The shipments comprised 54 barrels salted hides, and one lot of old rope.

The report of Superintendent Boutilier forms an appendix to this report.

SHIPPING AND DISCHARGING OF SEAMEN.

During the past year, fifty-two returns have been received—one from the province of Quebec, six from New Brunswick, thirty-seven from Nova Scotia, four from Prince Edward Island and four from British Columbia.

The returns from the provinces are as follows:—

	Seamen Shipped.	Seamen Discharged.	Amount of fees Collected.
			\$ cts.
Quebec	2,991	3,740	1,538 30
New Brunswick.....	3,242	1,677	1,171 30
Nova Scotia.....	7,466	5,813	5,491 10
British Columbia	4,532	4,512	3,948 20
Prince Edward Island.....	290	137	184 30
Total for 1912-13.....	18,521	15,879	12,333 20
" 1911-12.....	13,708	11,290	11,481 40
Increase for 1912-13.....	4,813	4,589	851 80

MASTERS AND MATES.

In order to facilitate the work, which is growing in volume and extent, a change was made in this branch of the service during the year. The work has been divided into three divisions—the Eastern, Western, and Inland waters—each under a supervising examiner.

CANDIDATES EXAMINED.

In the Eastern division, 83 candidates were examined for masters' certificates—20 for sea-going, 31 for coasting, 16 for minor waters, 9 for inland waters and 7 for temporary certificates. Of the above, 13 failed—6 for sea-going, 3 for coasting, 3 for minor waters and 1 for inland waters. For mates' certificates, 66 candidates were examined—12 for sea-going, 37 for coasting, 6 for minor waters and 11 for inland waters, besides 7 for second mates' certificates; 14 failed—5 for sea-going, 5 for coasting, besides 1 for second mates' certificate.

PILOTAGE.

Thirty pilotage authorities made returns for the year ending 31st December, 1912. Those reports show that there are 124 pilotage commissioners, 307 pilots, 57 apprentice pilots and that pilotage was paid by 8,278 vessels.

The total earnings of pilots were \$435,181.82, the total receipts \$482,815.81 from pilotage out of which the pilots were paid.

The Minister of Marine and Fisheries is the pilotage authority both for Montreal and Quebec.

The Pilotage tender-boat *Eureka* which was stationed at Father Point from early in the spring until the 6th of December sailed a total of 6,279 miles, boarded 1,141 vessels, passed 298 inward and 222 outward.

The report on pilotage forms an appendix to this report.

SESSIONAL PAPER No. 21

MONTREAL PORT WARDEN.

Navigation opened on the 30th of April—four days later than last year.

The first ocean steamer arrived on the 1st of May—two days later than last year.

The first vessel which passed through the strait of Belle Isle was the *Cairndhu* on the 21st of June.

Navigation closed on the 3rd of December—the same date as last year.

Four hundred and fifteen sea-going vessels reported at the Port Warden's office, having a total tonnage of 1,790,518 register tons—an increase of 17 vessels and 76,164 tons.

Three hundred and twenty-seven vessels of all classes entered from the lower ports, having a tonnage of 617,236 tons—a decrease of 25 vessels and 20,195 tons. The clearances for the same ports were 104 vessels, having a tonnage of 82,331 tons—decrease of 4 vessels and 3,377 tons.

The quantity of grain shipped from Montreal during the season of navigation was 38,650,550 bushels, an increase of 903,538 over 1911. Of grain shipped, 30,652,672 bushels was wheat; 1,761,727 barrels of flour and meal were shipped, a decrease of 75,005 barrels compared with 1911. The detailed statement of shipments furnished through the Board of Trade of Montreal will be found in the Montreal Port Warden's report.

LIST of Port Wardens who made Returns, and the Amount of Fees collected by each.

Port.	Port Warden.	Fees.
		\$ cts.
Annapolis, N.S.	Joseph Malenon	10 00
Chatham, N.B.	M. E. Goggin.	
Halifax, N.S.	Neil Hall	2,980 65
Louisburg, N.S.	Donald J. Matheson	
Moncton, N.B.	R. C. Bacon	
Montreal, P.Q.	A. H. Reid	2,639 00
Nanaimo, B.C.	J. T. Knarston	30 00
North Sydney, N.S.	W. H. Kelly	87 00
Port Hawkesbury, N.S.	Nicholas Martin	110 00
Prince Edward Island	H. P. Welsh	51 00
Quebec, P.Q.	Alex. Russell	1,603 50
St. Andrews, N.B.	John Wren	12 50
Sydney, N.S. International Pier	Nelson H. Townsend	568 00
Vancouver, B.C.	A. H. Reed	1,810 00
Victoria, B.C.	Charles E. Clarke	443 00
Yarmouth, N.S.	R. M. Ferguson	1,750 00
		10,519 65

THE PERMANENT INTERNATIONAL ASSOCIATION OF NAVIGATION CONGRESSES.

The members of this association consist of representatives of Governments, shipping corporations, shipowners, city corporations, chambers of commerce, boards of trade, river and canal commissions, harbour boards, societies of engineers, army engineers, manufacturers, contractors, shippers, marine associations, technical schools, libraries, and other institutions, interested in maritime and inland navigation, improvements of harbours and waterways, including canals.

4 GEORGE V., A. 1914

The association has its permanent headquarters in Brussels, but international congresses are held in different places of importance at intervals. The congresses were confined to Europe until 1912, when the first congress on the American continent was held at Philadelphia, opening on the 23rd of May.

The Canadian membership so far consists of the Government of Canada, represented by the Minister of Marine and Fisheries, and the membership began in 1905 by the payment of 1,000 francs. This sum has been paid annually since 1905 to retain the membership and, in addition to the Minister, the Government is entitled to the privilege of sending four delegates to the congresses.

The Minister of Marine and Fisheries accepted the honour of being one of the patrons of the 12th congress. Three delegates to attend the meetings of the congress were appointed by him.

These delegates were Col. W. P. Anderson, chief engineer of the department of Marine and Fisheries; J. S. Armstrong, of Fredericton, N.B.; and Prof. J. H. McLeod, of McGill University, Montreal. In connection with the congress, the permanent council and executive committee and prominent delegates from Europe, Asia, the United States and South American countries were invited to visit Canada, and, for this purpose and other expenses, Parliament appropriated \$20,000; of this sum \$18,121.25 was expended in furnishing means of conveyance and entertainment of the distinguished guests, who inspected and examined the various canals and waterways from Sault Ste. Marie to Quebec.

In this expenditure was included the cost of an illustrated book entitled 'Canada, Her Natural Resources, Navigation, Principal Steamer Lines and Transcontinental Lines.' A large number was distributed at the congress and the remainder generally distributed in Canada and several European countries.

The visitors expressed their great satisfaction in being afforded an opportunity to inspect the waterways on the Great Lakes and the St. Lawrence river.

LEGISLATION.

Chapter 32. An Act respecting Harbour Commissioners of Montreal.

Chapter 40. An Act to amend the Quebec Harbour Commissioners Act, 1899.

Chapter 41. An Act to provide for further advances to Quebec Harbour Commissioners.

Chapter 49. An Act to amend the Canada Shipping Act.

Chapter 54. An Act to incorporate the Vancouver Harbour Commissioners.

Chapter 57. An Act to authorize the payment of Subsidy to the Western Dry Dock Shipping Company, Limited.

Chapter 158. An Act to incorporate the New Westminster Harbour Commissioners.

A. JOHNSTON,

Deputy Minister of Marine and Fisheries.

SESSIONAL PAPER No. 21

APPENDIX No. 1.

ANNUAL REPORT OF THE CHIEF ENGINEER OF THE DEPARTMENT
OF MARINE AND FISHERIES.

The Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the following report of the work done in the several services under the supervision of this office during the twelve months ended March 31, 1913.

There have been no changes in the duties pertaining to this branch during the past year; they remain as enumerated in previous reports.

STAFF.

The following changes have been made during the year in the staff of my office:—

Mr. G. L. MacLaren, draughtsman in our Prescott depot, has been removed to Ottawa for work on construction plans, from 3rd April, 1912.

Mr. W. L. Melville, temporarily employed on clerical work, resigned on 19th April, 1912.

Mr. J. Henderson was appointed as a permanent draughtsman, May 2, 1912.

Mr. J. H. Wales was appointed permanently as messenger, May 8, 1912.

Mr. V. A. E. Steele was employed as a temporary draughtsman from August 27 to September 30, 1912.

Mr. Georges O. Morisset, who had been transferred to my staff after relinquishing the appointment of private secretary to the Minister, was unhappily prevented, by long and serious illness, from familiarizing himself with his new duties, and died in December, 1912. By his death the service has been deprived of a most promising official, and my staff of a genial and popular fellow worker.

OFFICE WORK.

The largest part of the work done by the general staff of the branch consists in the construction, repair, and improvement of light buildings, fog-alarms, beacons and other aids to navigation, the supply of new or improved illuminating apparatus, etc., the payment of expenditures for these services being made out of the vote of \$1,000,000 for construction of aids to navigation. Full details of the work done in this connection during the past year are contained in a separate report in tabular form attached hereto, which gives a complete statement of all expenditure charged to the vote in question. (Inclosure A.)

In addition to the work of this branch done under the above vote, the staff have been called upon to perform work of varied description for other branches of the department, and which may be summed up as follows:—

For the Meteorological Service Branch.—Erection of storm signal masts at Point Tupper, N.S., and Tadousac, P. Q.; repairs to storm signal mast at North Sydney, N.S.; and preparation of survey plan and description of site for a marine signal station at Grondines, P.Q., and securing title to same.

For the Life Saving Branch.—Construction of a combined lifeboat-house and dwelling at Bay View, N.S., including preparation of survey plan and description of site, and securing title to same. Construction of a combined boat-house and dwelling;

also watch tower at life-saving station, Cheticamp, N.S., including preparation of survey plan and description of two sites, and securing titles to same. Construction of an annex to the dwelling-house for the life-boat crew at Long Point, Ont. Construction of a combined boat-house and dwelling at the life-saving station, Ucluelet, B.C., including the preparation of survey plan and description of site, and securing title to same. Preparation of survey plan and description of site for life-saving station and securing title to same, at Souris, P.E.I., Escuminac, N.B.; Little Wood island, N.B.; and Toronto, Ont.

For the Department of Naval Service.—The construction of wireless telegraph buildings at Pachena point and Estevan point, B.C.

A clerk has been detailed to look after the completion of the titles to all properties owned by this department, and as this includes over 1,500 lighthouse sites, besides other properties scattered throughout the Dominion, and even in Newfoundland and the United States, the work has proved very heavy. The destruction by fire in 1897 of all the department's records has also complicated and retarded the work. My aim is ultimately to have on record a deed of every piece of property owned or leased to the department, or leased by the department, with registration in the local registry office, as well as in the office of the Registrar General at Ottawa. In the case of all new properties acquired, expropriation plans and descriptions are filed in addition to the usual notarial deed, as an extra precaution. During the past year, 124 deeds and other title documents to properties have been obtained.

The work in connection with applications for water lots also continues to be very heavy, as will be seen by reference to the draughting room statistics. Every application has to be examined, entered on an index plan, plans and descriptions checked, and the proposition reported upon and valued. This involves a great deal of detail, and takes the full time of one draughtsman. Both these branches of my work are in charge of Mr. J. W. G. Roberts, whose executive ability is particularly noteworthy.

Plans and specifications for all important new buildings and repairs, new vessels, etc., are made or approved in this office.

The following table indicates the work done in the draughting office during the twelve months ended March 31st, 1913:—

Description of Work.	Plans Designed.	Plans Received.	Copies Made.
Lighthouse towers and dwellings	27	11	232
Fog alarm buildings	4	3	44
Details	38	5	680
Wharfs, piers, &c	10	30	44
Outbuildings	10	3	112
Machinery	10	27	148
Lanterns and illuminating apparatus.....	20	322	310
Buoys and apparatus.....	5	148	317
Beacons.....	7	4	28
Steamers.....	.....	111	4
Land surveys	115	172	455
Plans relating to water lot applications	24	670	43
Miscellaneous	37	305	146
	307	1,811	2,563

Total plans for twelve months from April 1, 1912, to March 31, 1913.....	4,641
Charts received and recorded	298
Charts received and entered in chart books	27
Photographs received and recorded.....	294
Specifications and bills of material written	130
Notices to mariners issued (comprising 361 subjects).....	123

SESSIONAL PAPER No. 21

PUBLICATIONS.

The work of preparing and issuing notices to mariners continues to be heavy and urgent; during the past twelve months 123 notices, covering 361 subjects, have been published. Amongst important notices, involving considerable labour in compilation, and representing useful work done in the department, are:—

A complete list of official Canadian government publications useful to mariners.

Warnings and directions to vessels approaching Canadian ports during military manœuvres or on certain other public occasions.

Description of buoys and beacons on Thompson river, B.C.

Hydrographic information respecting Skidegate inlet, Queen Charlotte islands, B.C.

Regulations governing the opening and closing of the swing bridge on the Fraser river at New Westminster, B.C.

Re-arranged and complete list of buoys in Port Arthur harbour, Ont.

Description and list of new aids to navigation to be established in Livingstone channel, Detroit river.

Description and list of buoys in Winnipeg river, Manitoba.

Description of buoyage in Chignecto channel, Bay of Fundy, N.B.

During the past twelve months notices relating to waters outside of Canada were issued, covering fourteen items relating to Newfoundland and Labrador, one item relating to the Atlantic, twelve to the inland, and seven to the Pacific waters of the United States, as well as nine notices referring to transatlantic, and one notice to transpacific subjects. No attempt is made to issue a complete synopsis of British or foreign notices, but merely to publish items likely to be of immediate interest to Canadian vessels, or to vessels leaving Canadian ports for the more important or frequented foreign ports.

Hydrographic surveys are under the control of the Naval Service Department. As, however, most of the information contained in Canadian notices to mariners relates to work done in this department it has not been thought desirable to transfer their preparation to the newer Department. Therefore, any hydrographic notes reaching this department are prepared for publication in this office, and embodied in notices to mariners.

In preparing these, special attention has been paid to publishing all information obtainable respecting the hydrography of Canada, and the fullest possible sailing directions have been appended to all descriptions of aids to navigation so as to increase the value of the notices.

In bringing up to the 1st April, 1913, the lists of lights and fog signals, they were thoroughly revised and practically rewritten, being put in a more modern and improved form, with all bearings given in azimuths referred to the astronomic meridian. They were published for the first time in three separate volumes, one for the Atlantic coast and the River St. Lawrence to the head of ocean navigation; one for the Inland waters of Canada; and the third for the Pacific coast. The work of revising these lists and of preparing notices to mariners for publication is done by Mr. J. M. O'Hanly, whose accuracy and industry deserve special mention.

PERSONAL INSPECTIONS.

During the past year a large number of personal inspections was made by myself and by my principal assistant, Mr. B. H. Fraser. The more closely construction work is watched and the more personal supervision is given to the general investigation into requirements on the ground by principal officials of the department, the more efficiently will the work of the department be carried out.

4 GEORGE V., A. 1914

The following are the more important of the inspections made by me during the past year:—

In May last I was instructed to attend the International Congress of Navigation at Philadelphia, as a representative of the Canadian Government, and had the advantage of meeting engineers from all the great maritime nations of the world, and of joining them in the discussion of such questions as had been suggested by the Permanent Congress as of timely interest. There was an attendance of over 800 members. After the close of the business meetings the members were given the opportunity of inspecting the Ohio river improvements in the vicinity of Pittsburg; the Delaware river improvements, the New Jersey canal project, the Cape Cod canal, the harbours of New York and Boston, the Erie canal, and the great lakes navigation system, including the locks at Sault Ste. Marie.

At the last named place about 150 of the delegates who wished to visit Canada were taken in charge by Prof. McLeod, representing the Canadian Society of Civil Engineers, who undertook the organization of the Canadian visit at the request of the Minister, and by myself on behalf of the Department, and were personally conducted to Quebec, crossing Lake Huron by C. P. R. steamer to Port McNicoll, thence by special train to Toronto, thence by Richelieu and Ontario steamer to Prescott, to Ottawa by special train, to Coteau Landing by special train, down the rapids in a special steamer to Montreal, and thence by government steamers to Quebec. At Toronto, Ottawa, Montreal and Quebec they were entertained through the good offices of the local branches of the Canadian Society of Civil Engineers. On leaving Canada they expressed officially to the Minister their appreciation of the reception they had received in Canada.

On July 2, I left Ottawa for the west, and inspected the lights on the upper lakes in company with Mr. Carson, resident engineer for Ontario. Arrived at Fort William, I continued by rail to the Pacific coast, and made a very thorough inspection of all aids requiring work, giving special attention to Prince Rupert and the northern waters, including the Queen Charlotte islands. This work occupied my time till August 15.

In December I was sent by the government to represent Canada at the annual meeting of the National Rivers and Harbours Congress at Washington. Appended is a copy of the report made on returning from that trip.

December 12, 1912.

Hon. J. D. HAZEN,
Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to report that in accordance with the terms of Order in Council, and in conformity with your instructions, I went to Washington and attended the sittings of the National Rivers and Harbours Congress on the 4th, 5th, and 6th instants.

At the urgent request of the officials of the Congress I spoke a few words at the opening meeting, giving some account of work done by Canada in the development of rivers and harbours, with special reference to work under departmental control. These remarks will be published in the proceedings of the Congress.

The deliberations of the Congress were attended carefully throughout the three days' sessions, and it appears that their interests are so purely national that Canada has little to gain by participating or being represented in the meetings. The aim of the Congress is apparently to emphasize the importance of the improvement of rivers and harbours, and to use their influence in every way possible to secure larger appropriations from the Federal Government for these purposes.

Their organization appears to be very complete; they have branches in every state in the Union, and these branches are all represented at the federal congress. The state delegates are charged with the duties of interviewing and educating the

SESSIONAL PAPER No. 21

members of Congress and Senators for their districts and interesting them in the aims of the main body.

There were some indications of local jealousy; apparently members from other parts of the country think that too much money has been allotted and too much attention given to the needs of the Mississippi valley, and the President of the United States, in opening the proceedings, pointed out that the work of improving the levee system of the Mississippi river, which was urged upon the legislature as a river improvement, could not be placed in that category. It should be honestly defined as a reclamation scheme of national importance, and command a national grant for that purpose and not as a navigation project. He alluded to waste which had occurred in the past in consequence of several state and federal grants having been expended under separate controls, and urged that all money in future allotted for protection purposes should be expended as part of one well organized and comprehensive scheme. This point of centralizing control so as to preserve unity of aim is also worthy of attention in connection with Canadian schemes where money allotted from different sources is to be spent on a single project.

A few points mentioned by the more prominent speakers were noted, which may possibly prove of interest to the Canadian Government, although they do not immediately concern Dominion interests:

The Secretary of War, in the course of his address, claimed that power developed by damming rivers in connection with national improvements should never be alienated to private corporations, but should remain a national asset, and that any revenue derived therefrom should be considered as a national return on money invested. This is a proposition that is equally applicable to water powers developed by damming Canadian rivers.

The chairman of the Rivers and Harbours Committee of the United States Congress made the statement that the enormous sum of \$725,000,000 had been spent on river and harbour improvements, more than half of it in the last decade. Particulars of the distribution of this amount will be found in the published proceedings of the Congress. For some years past the United States Congress has allotted \$50,000,000 per annum for river and harbour improvements.

The president of the Congress, Hon. J. E. Ransdell, M. C., drew attention to the danger to commercial interests which had arisen from a monopoly of terminals by railway companies, and very strongly advocated the nationalization of all terminal harbours, and the control of the water fronts by the Federal Government. A discussion of his address brought out also the want of facilities for cheap handling of freight at terminal points, and the need as well as the possibility of improving loading and unloading devices, and providing for rapid shipment with the least possible manual interference. In this connection the statement was advanced that the improvement of terminal facilities at Montreal had already diverted to the St. Lawrence the shipment of a large proportion of the wheat formerly reaching New York.

There seemed to be a general impression amongst the members, especially those from the lake districts, that the construction of a ship canal via the Ottawa river would ensure to the St. Lawrence a permanent conquest of the western freight shipments, both of the United States and Canada, and the information most frequently and insistently sought from me was indication of the prospects of an early undertaking of the project.

Appended hereto is a programme of the Congress, statements submitted to the Congress by the Deeper Waterways Commission, the first number of a very interesting magazine, which is published in the interest of the Congress, and a report of the annual meeting.

Respectfully submitted,

WM. P. ANDERSON,

*Delegate from Canada to the Ninth Meeting
of the National Rivers and Harbours Congress.*

4 GEORGE V., A. 1914

In January I went, at my own charges, to Panama, to inspect the work done on the Isthmian canal, and made particular note of the proposed lighting arrangements. All tangents are to be marked by ranges, in some cases located at considerable distances from the stretch they are to serve. The plan has been adopted of making the range for use in one direction show an alignment about one third the width of the canal prism distant from the range for use in the opposite direction, so that vessels passing can keep to their respective ranges. This was proposed some years ago by the United States Government for the River St. Mary, but the pilots did not approve of the plan, and it was afterwards abandoned. The action of the rock and earth which have slid or been thrust into Culibra cut is another new point of great importance that occupied my attention. It would be useless to mention the many points of engineering interest in connection with the work, especially as they have all been discussed in the technical engineering press, but one could not help being specially impressed by the excellent systems of supply, control and hygiene that have been elaborated. The management of this work is a standing example of what engineers can accomplish when they are not hampered by patronage or other limiting conditions.

The principal inspections made by Mr. Fraser during the fiscal year were: In April, to Port Arthur in connection with the opening of navigation in Thunder bay; in June, from Prescott to the head of lake Erie, looking into all questions relating to construction work in that district; in August, to Bracebridge in connection with the question of regulating the handling of logs on the Muskoka river; in August, to St. John, in connection with the design of the wharf at the new departmental depot; in September, to lake of the Woods, to attend the meeting of the Joint International Commission; in October, to Amherstburg, in connection with the new departmental depot there; in January, 1913, to the Bay of Fundy, in connection with the new departmental depot and the extensive improvements required to Gannet rock and Machias Seal island; in March, to Boston, in connection with the establishment of new submarine signals.

A number of trips were made in addition, to the various Agencies, in connection with departmental routine, more especially regarding placing of the workshops on a new basis, and rearranging the schedules of pay.

DEPARTMENTAL DEPOTS.

The department has adopted the policy of securing and developing depots for lighthouse, buoy, and other departmental service and the details in connection with the acquisition and improvement of these centres of departmental activity have been entrusted to the Chief Engineer's branch.

During the past year the work on the Prince Rupert depot, referred to in last year's report, was completed, and the depot commissioned, under the charge of Captain F. T. Saunders, as sub-agent, with a small staff. It is hoped, as soon as a steam tender is available for this depot, that a very much greater efficiency in the care of aids to navigation in northern British Columbia waters will result from its presence, as it will no longer be necessary to depend on a base 500 miles, or more, distant.

The St. John, N.B., depot, reported last year as secured, is being developed and a contract has been entered into with Mr. F. L. Boone, of St. John, to build a large concrete wharf, the contract price being \$185,000. This wharf will afford berths for two Government steamers, and allow them to float at all stages of the Bay of Fundy tide. The great height of pier involved has necessarily made the work expensive. During the coming season additional work will be done in connecting the wharf with the shore, and in providing store houses and other necessary buildings.

At the Prescott depot the Department was fortunate in being able to extend their holding by the purchase of the property immediately adjoining to the eastward which

SESSIONAL PAPER No. 21

had previously been used as a starch works. The land in question comprises an area of $2\frac{1}{2}$ acres, with a frontage of 373 feet on King street and 290 feet, with a wharf face, on the river. On the lot stands a solid brick three-story and basement building, 265 feet long by 90 feet wide, which will be used for stores, with a machine shop in the basement. The purchase also included several other buildings and some valuable machinery, and the price was \$47,500. It is intended during the coming year to repair and remodel the starch works to hold all the iron-working machinery, accommodation for which was urgently needed, and to incorporate the new property with the old and adapt the whole for more extensive use. An estimate of \$40,000 for this purpose has been submitted, the work to be done by the staff of the depot.

Appended hereto is a report from the officer-in-charge of the Prescott depot, which will give an idea of the large variety and detail of the work done at that establishment. I am pleased to report this depot to be in a very satisfactory state of efficiency.

At the Amherstburg buoy depot, purchased last year, the old wharf was entirely rebuilt in concrete, from the water up, and a neat store and office built on it. This depot is now very efficiently equipped for handling the important work of maintenance of buoys in the Detroit river, to the mutual satisfaction of the department and of the shipping interests. The cost of the work was \$10,246.61.

Attention is drawn to the necessity for improved depot accommodation at our British Columbia and Quebec agencies. In Victoria we have now no room for storing our supplies, and are depending on makeshift temporary arrangements which are extremely unsatisfactory and inefficient; in Quebec we have been given notice to quit by the Transcontinental Railway, and should get new quarters before we are driven out of our present depot on the King's wharf.

During the past year I paid several visits to the above centres to attend to the details of the work indicated, or to investigate proposed sites.

WEST COAST TRAILS.

During the season of 1912 the West Coast trail on Vancouver island was extended from Nitinat river to Carmanah, a distance of $8\frac{1}{2}$ miles, but only as a foot path; the entire trail, over a distance of 32 miles, was brushed and cleared 6 feet wide, and surfaced to give a 3-foot travelling width; small streams were also bridged, and a traverse line run, and mile-posts placed.

The total expenditure during the fiscal year on this work amounts to \$14,017.08; this includes the construction of five shelter huts between Nootka and Quatsino (which are provisioned) for the benefit of shipwrecked mariners.

The trail now skirts the coast from Banfield creek to Carmanah lighthouse, and is considered adequate protection, as it furnishes all the communication required in the event of further shipwrecks occurring on the west coast. It will therefore probably disappear from my report as a construction item, in future.

REMOVAL OF OBSTRUCTIONS.

During the past twelve months the following work has been done, under the annual appropriation for the removal of wrecks and obstructions:—

The steamer *Florida* which sank at Victoria pier, Montreal, was removed under the superintendence of the Montreal Harbour Commissioners, the cost of removal being \$698.96. This amount will be collected from the owners.

The scow *Newell Hubbard*, which sank at the lower end of Hackett Reach, Detroit river, was removed jointly by the United States and Canadian Governments, the cost of removal to this department being \$453.70.

An old barge which sank at the entrance to Chateauguay river, P.Q., was removed by the crew of the C.G.S. *Maggie May*, at a cost of \$297.54.

4 GEORGE V., A. 1914

The derelict hull of a vessel which drifted into False creek, Vancouver harbour, B. C., was removed by the Vancouver Dredging and Salvage Co., at a cost of \$15.

Expenses were incurred in connection with the inspection of the removal of the ss. *Joliet*, which sank in St. Clair river, Ont., of \$143.05; the cost of removal was borne by the owners.

Logs or snags were removed from Nanaimo harbour, B.C., at a cost of \$9; from Crapaud harbour, P.E.I., at a cost of \$5; and from Victoria harbour, B.C.

ICE-BREAKING.

Three contracts were entered into, during the past season, for ice-breaking in Thunder bay and vicinity:—

(1) The Canadian Towing and Wrecking Company, Limited, of Port Arthur, contracted with the department to keep the harbours of Port Arthur, Fort William and West Fort William open for navigation until December 17, 1912, and to open those harbours in the spring of 1913 in time to admit upward-bound vessels to enter the harbours as soon as the Sault Ste. Marie canal should be open for navigation. The contract price was \$19,250, which included an agreement to remove all light-keepers in the vicinity from their stations at the close of navigation in 1912.

In addition to the above contract, owing to representations made by the Boards of Trade of Winnipeg, Fort William and Port Arthur, the Dominion Marine Association, Lake Carriers' Association, Canadian Pacific Railway Co., and the Dominion Grain Commission, pointing out the absolute necessity of the above two harbours being kept open to the latest possible date, to facilitate the movements of sixty-one vessels wintering in the harbours, the department entered into an additional contract with the Canadian Towing and Wrecking Company, Limited, to keep the harbours open for navigation until the 15th January, 1913, for the sum of \$1,000 per day, which work was satisfactorily carried out, the expenditure incurred thereby being \$29,000.

(2) A contract was entered into with S. Shipman, of Sault Ste. Marie, Ont., to keep free from ice the channel between Kensington point, on the north shore of St. Joseph channel, and a convenient landing on St. Joseph island, or Campement d'Ours island, the work beginning in the autumn of 1912, and continuing until the ice had formed to sufficient thickness to permit teams of horses to cross in safety. The work also included the breaking of a channel in the spring before the ice becomes dangerous, and keeping the channel free until general navigation was resumed. The contract price was \$500.

(3) Owing to strong representations made by the owners of Canadian vessels, arrangements were made with the Thompson Towing and Wrecking Association, of Cleveland, Ohio, to keep the channel open for navigation in the Soo river, particularly in Mud lake, for 7 days from the 12th to the 19th December, 1912, at \$700 per day, which was satisfactorily performed, the total expenditure being \$4,200.

Respectfully submitted,

WM. P. ANDERSON, M. INST. C. E.,
Chief Engineer

CHIEF ENGINEER'S OFFICE,
Department of Marine and Fisheries,
Ottawa, Canada, April 1, 1913.

(INCLOSURE A.)

DETAILED REPORT OF THE CHIEF ENGINEER OF THE DEPARTMENT OF MARINE AND FISHERIES ON CONSTRUCTION, ESTABLISHMENT AND IMPROVEMENT OF LIGHTHOUSES AND OTHER AIDS TO NAVIGATION, UP TO MARCH 31, 1913.

To the Deputy Minister,
Department of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit a detailed report on work done in the construction and establishment of aids to navigation, for the twelve months ending March 31, 1913.

This statement is put in tabular form and includes all expenditures incurred during the year against the vote of one million dollars for construction, etc., and no work done chargeable to other votes.

NOVA SCOTIA.

NEW AIDS TO NAVIGATION.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Little river	Erection of a pole, with hoisting apparatus, with shed at base. Will be completed next season.	Day's labour....	F. L. Fultz.....	63 95

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Aconi point....	Searching title of site .....	.....		2 00
Amet island....	Repairs to cribwork	Day's labour....	B. D. Whiting ...	247 80
Blackrock ...	Illuminating apparatus improved by the installation of a 4th order dioptric lens.	"	F. L. Fultz.....	411 32
Cape North....	Installation of new diaphone plant, and construction of new fog alarm building to replace steam plant destroyed by fire.	"	{ J. L. Colter..... } { T. H. Philips..... }	3,838 40
	Provision of Class "D" duplicate diaphone plant, and type "F" diaphone.	Furnished under general contract.	Canadian Fog Signal Co., Toronto.	6,148 31
Candlebox island	Expenses in connection with securing deed of land.	.....		20 11
Caribou island..	Protection work near lighthouse	Day's labour....	Wm. Talbot.....	431 13
Chester island ..	Illuminating apparatus improved by the installation of a 4th order dioptric lens.	"	F. L. Fultz....	512 98
Cross island	Illuminating apparatus improved by the installation of a 4th order dioptric lens.	"	{ A. McLellan..... } { James Lovett..... }	1,215 83

4 GEORGE V., A. 1914

NOVA SCOTIA.—*Continued.*

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Light Station	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Dartmouth	Repairs, salaries and general upkeep of depot.	.....	.....	948 10
Devil island, east station.	Illuminating apparatus improved by the installation of a 4th order dioptric lens.	Day's labour....	F. L. Fultz.	1,016 46
Digby pier.	Illuminating apparatus improved by the installation of a 5th order lens. Will be completed next year, 1913-14.	.....	.....	618 19
Flint island.	Searching title to land. ....	.....	.....	2 00
Fourchu, Cape..	Erection of new dwelling, and taking down of old one.	Contract.	S. Potier & Son, Eel Brook, Yarmouth Co.	4,857 00
	Inspection and incidental expenses.	.....	.....	37 28
Freels, Cape....	Enlarging concrete dam, and erection of covered way between fog alarm and power house.	Day's labour....	{ J. L. Colter ... } { M. Myrick ... }	1,246 25
Gillis point.	Addition made to dwelling, also repairs to kitchen.	"	A. McPherson	754 58
Gregory island..	Construction of a new dwelling.	Contract.	J. L. Campbell, St. Peters	794 00
	Inspection and incidental expenses.	.....	.....	56 76
Guion island....	Searching title for land. ....	.....	.....	2 00
Harbourville...	Provision of a wharf lantern ..	.....	.....	8 74
Highland village	Purchase of site. ....	.....	.....	50 00
Hobson island ..	Repairs to cribwork	Day's labour...	M. A. McKinnon.	2,780 74
Ingonish island.	Erection of combined boathouse, oil shed and slipway.	Day's labour...	E. J. Geizer.	324 23
Jerseyman island	Completion of boathouse. Work started last year.	"	H. Sampson.	90 20
Kidstone island.	Completion of the construction of a tower started last year.	" ...	T. Phillips.	43 49
Main-a-dieu.	Illuminating apparatus improved by the installation of a 4th order dioptric lens with diamond burner.	"	Wm. Merson.	1,215 71
Man-of-war point	Purchase of site. ....	.....	.....	45 85
Mauger beach...	Erection of double dwelling and boathouse.	Contract.	Freeman & Griffin, Isaac's harbour.	5,790 00
	Incidental expenses. ....	.....	.....	14 03
Owls head.	Balance of contract. ....	.....	.....	50 00
Parrsboro.	Provision of a wharf light. ....	.....	.....	10 23
Port Greville....	Purchase of site for lighthouse..	.....	.....	194 70

SESSIONAL PAPER No. 21

NOVA SCOTIA.—Continued.

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Port Hood	Provision of a wharf light .....	.....	.....	10 44
Prim point.. ...	Moving boiler in fog alarm. ....	.....	.....	188 12
Pugwash	Construction of 100 feet of protection works around light-house. Work started last year.	Day's labour. ..	C. E. Woodlock.....	368 84
Race, Cape.....	Erection of storehouse, coal shed, extensive repairs and general replacements.	"	J. L. Colter, T. H. Phillips	8,298 90
Ronde, Cap la...	Protection work and repairs to dwelling.	"	P. Mauger.....	145 90
Sable island.....	Alterations to tower, provision and installation of a third order dioptric lens.	"	E. J. Geizer... ..	15,009 18
Salvages	Provision of a class "E" duplicate diaphone plant and type "G" diaphone.	Furnished under general contract	Canadian Fog Signal Co., Toronto.	9,424 72
Scatari	Provision of a 10-foot lantern. Freight and incidental expenses.	"	J. Inglis & Co., Toronto	2,785 00
	Erection of lantern and installation of illuminating apparatus. Will be completed next year, 1913-14.	.....	.....	197 50
South Ingonish	Erection of a pole light with shed at base.	Day's labour..	J. Young.....	378 24
St. Paul island..	Erection of suspension bridge between two islands.	"	D. McDonald.....	2,515 05
	Provision of structure.....	Contract.....	Dominion Bridge Co., Montreal.	940 00
Sydney, S.E. bar	Incidental expenses in connection with new lighthouse constructed last year.	.....	.....	115 90
Tupper point ...	Illuminating apparatus improved by the installation of a 4th order dioptric lens.	Day's labour....	F. L. Fultz.....	509 53
Miscellaneous expenses.	Materials, &c., in connection with the establishment of buoys, beacons, &c.	.....	.....	4,194 06
	Eight sub-marine bell mechanisms.	Contract.....	Sub-marine Signal Co., Boston, U.S.A.	12,000 00
	Travelling expenses of officials, telegrams, salaries of foremen, &c.	.....	.....	2,173 14
	Total expenditure for Nova Scotia.....	.....	.....	93,156 89

NEW BRUNSWICK.

NEW AIDS TO NAVIGATION:

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Great Salmon river.	Erection of a 30-ft. pole with shed at base, also apparatus for hoisting a Chance anchor lens lantern.	Day's labour....	Geo. N. Breen.	296 49

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Big Duck island.	Repairs to cistern	Day's labour....	.....	110 63
Carron point....	Purchase of site . . . . .	.....	.....	200 00
East Head Musquash.	Clockwork mechanism for illuminating apparatus replaced by a new Reliance clock.	Day's labour....	D. J. Gallagher.....	407 90
Escuminac....	Repairs to breakwater and road.	" .....	.....	179 65
Fox island....	Purchase of site of upper range lights.	.....	.....	150 00
Gannet rock....	Provision of rain water tank, also repairs to fog alarm building.	Day's labour....	G. N. Breen.....	129 69
Grindstone island.	Erection of concrete tower and extension to coal shed. This completes work started last year. Installation of a 4th order dioptric illuminating apparatus. Provision of fresh water for the fog alarm.	" . .	W. J. Fitzgerald.....	616 28
Hampstead... ..	Erection of wooden tower to replace mast light. This completes work started last year.	Contract... ..	G. W. Palmer, Tennant's Cove.	188 96
Heron island....	Erection of a boathouse and slip.	Day's labour....	Geo. N. Breen.... .	347 99
Lepreau point..	Boring a well 179 ft. deep	Contract.....	T. R. Kent.	450 00
	Provision and installation of a pump.	Day's labour...	J. Kelly.	220 00
	Extension of coal shed.....	"	Geo. N. Breen.....	
Machias Seal island.	Improvements to light and cutting down tower.	"	W. L. Harvey... ..	312 62
Negro point....	Repairs to lighthouse.	"	Geo. Cobham.....	67 01
Partridge island.	Additional accommodation made for coal and new boilers, also installation and freight of same	"	J. Carleton	627 78
Pea point.....	Apparatus improved by the installation of a 4th order dioptric lens. Will be completed next year 1913-1914.	" ...	.....	411 08
Petit Rocher....	Erection of pole with shed at base.	"	A. P. Martin.... .	260 10

SESSIONAL PAPER No. 21

NEW BRUNSWICK.—*Concluded.*CHANGES AND IMPROVEMENTS IN EXISTING AIDS.—*Con.*

Light Station.	Nature of the Work.	How performed.	Contractor or Foreman.	Expenditure during fiscal year.
				\$ cts.
Shediac north channel.	Raising towers and shingling buildings.	"	Geo. N. Breen.....	340 82
Tongue shoal...	Repairs to concrete wall..... Apparatus improved by the installation of a 4th order dioptric lens.	" ....	.....	806 21
Miscellaneous expenses.	Materials, &c., in connection with the establishment of buoys, beacons, spindles, &c.	.....	.....	718 36
	Travelling expenses of local officers, salaries of erectors, telegrams, &c	.....	.....	2,933 29
	Total expenditure for New Brunswick ....	.....	.....	9,774 86

PRINCE EDWARD ISLAND.

NEW AIDS TO NAVIGATION.

Belle river.....	Erection of skeleton tower and installation of a 6th order lens. Will be completed next season 1913-1914.	Day's labour....	G. L. Gaudin.....	345 65
West point.....	Completion of work of erection of pole lights started last year.	Day's labour...	G. L. Gaudin.....	82 77

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Fish island.....	Erection of skeleton tower to replace pole. Will be completed next year 1913-1914.	Day's labour....	.....	37 85
Georgetown.....	Illuminating apparatus improved by the installation of a 6th order dioptric lens.	Day's labour....	.....	358 62
Prim point.....	Small addition to dwelling....	Day's labour....	G. L. Gaudin.	185 82
Souris.....	Erection of oil store and repairs to dwelling.	Day's labour ...	.....	251 61
Summerside	Erection of enclosed wooden tower.	Day's labour....	G. L. Gaudin.....	221 96
Miscellaneous expenses.	Materials etc, in connection with the establishment of buoys and beacons.	.....	.....	414 01
	Travelling and incidental expenses.	.....	.....	130 54
	Total expenditure for P.E.I.	.....	.....	2,028 83

QUEBEC.

NEW AIDS TO NAVIGATION.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Ferolle point....	Construction of a 40-foot reinforced concrete tower, double dwelling, fog-alarm building, oil store, boat-house and store combined, installation of fog alarm machinery, and construction of a road. (Illuminating apparatus will be installed next season, 1913-1914).	Day's labour ...	D. Bilodeau	18,901 07
Flat island	Construction of a 20-foot concrete tower, dwelling, oil shed, boat-house and road. (Illuminating apparatus will be installed next season, 1913-1914).	"	D. Bilodeau	4,435 61
Natashkwan....	Construction of a 30-foot reinforced concrete tower, dwelling, oil store and boat-house. Will be completed next season, 1913-1914.	"	C. Carbonneau.....	6,688 19
St. Mary island.	Erection of a 15-foot reinforced concrete tower and wooden dwelling. Will be completed next season, 1913-1914.	"	F. E. Côté.....	5,315 63

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Anguille, cap....	Construction of double windows, winter porches and small repairs, also repairs to fog-alarm machinery.	Day's labour....	Lightkeeper	25 92
Bagot bluff	Installation of fog-alarm machinery and completion of work of general replacements.	"	J. Blanchette.....	7,284 98
Basse pointe....	Tower strengthened by wooden braces.	"	A. Arseneau.....	24 50
Belle isle (N.E.).	Installation of the diaphone, plant supplied last year.	" ...	A. Ouimet.....	497 97
Belle isle (S.W.).	Fog-alarm machinery shifted up to lighthouse, and floor strengthened to carry same.	.....	.....	260 83
Brulé, cap. ...	Apparatus removed from main light and placed in front tower.	Day's labour..	F. E. Côté.....	141 63
Caribou river, Saguenay.	Erection of a wooden tower for front light. Also the erection of a steel skeleton tower, as a back light. Inspection and other incidental expenses. (See also Simard).	Contract.....	S. Menier, Bagotville, Que.	1,232 50
Carleton...	Illuminating apparatus changed from fixed to occulting.	Day's labour....	Erector Dubé	190 75 256 39
Chat, cap.....	Extension to dwelling and repair to lighthouse tower.	"	F. E. Côté ..	1,154 98
Etang-du-Nord..	Rebuilding the dwelling surmounted by a lantern.	Contract.....	S. J. McAulay, Cherry Grove, P.E.I.....	3,019 00
	Provision and installation of a double flashing catoptric light.	Day's labour ..	Ferdinand Parent.....	2,188 25
Fame point.....	Laying water pipe line to fog-alarm building and repairs to foundation of fog-alarm building.	"	J. Hamel.....	6,874 90
Father point....	Construction of an oil shed.	"	D. Bilodeau	379 51

SESSIONAL PAPER No. 21

QUEBEC—*Continued.*

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Fox river.....	Moving front light.....	"	T. Dufresne	9 85
Grand Ent y....	Building of protection work around lighthouse pier.	"	Lightkeeper... ..	324 18
Ile Verte.....	Construction of range pole lights and an oil shed, the front pole supporting a Chance Anchor lens lantern, and the back pole a Piper headlight lantern.	"	J. Rochette.	198 65
Kamouraska....	Construction of a dwelling and two sheds.	Contract.....	Lachance & Fils, Fraser-ville, Que.	3,600 00
Monts, pte., des.	Improvement to the illuminating apparatus by the installation of a triple flashing catoptric apparatus, also new deck and gallery to lantern work will be completed next season 1913-14	.....	.....	106 19
Newport point..	Illuminating apparatus improved by the installation of a 6th order dioptric lens.	Day's labour....	R. L. Kelso.....	410 72
Norman cape...	Repairs to fog-alarm	Day's labour ..	A. Ouimet	243 00
Portneuf-en-bas.	Making day mark by slatting two faces of the steel tower.	Day's labour....	Lightkeeper	43 83
Salmon, cape...	Addition to fog-alarm building for coal.	Day's labour....	D. Bilodeau... ..	207 62
Simard.....	Erection of a wooden tower for front light.	Contract.. ..	S. Menier, Bagotville. Que.	1,232 50
	Inspection and other incidental expenses.	.....	.....	128 22
St. Anne de Beaupré.	Expenses re-purchase of site for lighthouse.	.....	.....	158 40
St. Antoine....	Compensation for site for light-house.	.....	.....	330 00
St. François wharf.	Installation of a 7th order lens	Day's labour ..	F. Parent.	143 95
St. Petronille...	Expenses re-purchase of site for lighthouse.	.....	.....	407 80
St. Siméon	Construction of an oil shed.	Contract.....	L. Tremblay	98 00
Upper Traverse pier.	Repairs to pier	Day's labour....	E. Donnelly.....	1,128 78
Miscellaneous expenses.	Materials, &c., in connection with the establishment of buoys and beacons.	.....	.....	2,624 19
	Expenses incurred by the workshops, including wages, material, power, &c., the salaries of erectors, wages and travelling expenses of local officers, telegrams and general upkeep of agency.	.....	.....	43,033 68
	Total expenditure for Quebec.	.....	.....	113,302 17

MONTREAL DISTRICT.
NEW AIDS TO NAVIGATION.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Chute à Blon-deau.	Erection of a wooden tower and installation of a 7th order dioptric illuminating apparatus, as a front light; also the erection of a 2-section steel skeleton tower and the installation of a 4th order dioptric illuminating apparatus for back light.	Day's labour....	T. Weir.....	2,101 07
	Provision of the steel tower....	Furnished under general contract.	Goold, Shapley & Muir, Brantford, Ont.	377 85
Crab island.....	Erection of wooden tower and the installation of a 6th order dioptric illuminating apparatus	Day's labour....	Thos. Weir.....	1,289 73
St. Sulpice course	Erection of range lights will be completed next season, 1913-14.	.....	.....	.....
	Provision of steel tower.....	Furnished under general contract.	Goold, Shapley & Muir, Brantford.	519 00
St. Sulpice traverse.	Erection of range lights will be completed next season 1913-14.	.....	.....	3,110 20
	Provision of steel tower.....	Furnished under general contract.	Goold, Shapley & Muir, Brantford.	519 00
Way Shoal traverse.	Erection of 2 lighted beacons...	Day's labour....	T. Weir ...	315 21

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Argenteuil.....	Construction of an oil house and fitting up of winch in boat-house	Day's labour....	Thos. Weir.....	28 13
Ash island.....	Repairs to pier and erection of a 2-section steel skeleton tower	"	J. Beauchemin.....	2,541 91
Barques, Ile des	Expenses in connection with securing site for light-house.	.....	.....	24 00
Cap Madeleine..	Construction of a wooden light-house tower and installation of illuminating apparatus.	Day's labour....	J. Beaudoin.....	854 82
Citrouille Pt....	Repairs to light-house pier.....	"	J. Beaudoin	2,099 37
Contrecoeur traverse.	" "	" . . .	P. Beauchemin	1,507 59
Grace, Ile de ...	Repairs to back light.....	"	R. Goulet ..	399 41
Grondines	Expenses re purchase of lower front light-house site.	.....	.....	259 85
Grondines	Expenses re purchase of upper back light-house site.	.....	.....	14 00
Jones island....	Erection of new pole on concrete base.	Day's labour....	T. Weir.....	68 23

SESSIONAL PAPER No. 21

MONTREAL DISTRICT.—*Continued.*CHANGES AND IMPROVEMENTS IN EXISTING AIDS.—*Con.*

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Lac, Pointe du..	Light improved by installation of a reflector and 35 ^m / _m burner, will be completed next season 1913-14.	Day's labour....	J. Beaudoin.....	497 05
Lavaltrie	Repairs to back light-house tower		J. Beaudoin	88 69
Meule, Pointe à la.	Re-erection of wooden front light tower and the erection of a 3-section steel skeleton tower. This work will be completed next season 1913-14.	Day's labour ...	P. Beauchemin	1,275 86
Nicolet.....	Expenses re purchase of site....			103 70
Petite ile Course	" "			20 00
Repentigny ...	Moving range lights to new location. Will be completed next season 1913-14.	Day's labour....	J. Beaudoin...	377 95
Rigaud river....	Replacing two removable beacons	"	T. Weir.....	110 67
Ste. Anne de Bellevue.	Erection of an open framed platform supporting a reflector lantern.	"	J. D. Weir.....	35 87
St. Helen island	Completion of removing tower from Guard pier.	"	J. Ouimet.....	7,472 83
St. Johns.....	Construction of new pier and placing light-house on same.	"	P. Beauchemin	1,494 89
St. Placide.....	Erection of steel skeleton tower.	"	T. Weir	249 46
	Provision of steel tower.....	Contract.....	Ontario Wind Engine and Pump Co.	105 00
Steamers, scows, &c., used on construction work.	Repairs, fittings to boats, pay and board of crews of the following craft: Adelard, Alpha, Hosanna, Lenore, Napoleon, Quebec and Sarah.			11,561 93
Tetreauville	Expenses re purchase of site....			32 70
Miscellaneous expenses.	Materials, &c., in connection with the establishment of buoys and beacons.			200 00
	Travelling expenses of officers, wages, rent of barges, salaries of temporary help and general upkeep of Agency.			13,618 94
	Total expenditure in Montreal Agency			53,270 46

ONTARIO (including Northwest Provinces).
NEW AIDS TO NAVIGATION.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Amherstburg ...	Extensive repairs and alterations of a permanent nature to wharf on site of newly acquired property and the erection of buildings, to be used as a marine depot for the storage of buoys, &c.	Day's labour....	M. J. Egan....	10,245 61
Hilton.. ..	Provision of a wharf light ...	.....	.....	10 24
McNicoll.....	Erection of wooden lighthouse tower for front light, and concrete foundation for back tower. (Will be completed during season 1913-14).	Contract..	James Erven, Midland, Ont., contract price \$1,800.	
	Erection of a 2-section steel skeleton tower for back light and installation of catoptric illuminating apparatus in both towers. (Will be completed during season 1913-14).	Day's labour....	T. H. Brewer.....	231 64
	Expenditure in connection with purchase of front light site.	.....	.....	200 00
Midland point..	Erection of range pole lights carrying Chance anchor lens lanterns (to be completed in 1913).	Day's labour....	W. H. Carson	45 14
Mink island shoal.	Establishment of an unlighted concrete beacon.	"	T. H. Brewer	4,504 32
North Bay.....	Establishment of an electric flash light on the Government wharf.	Contract.....	North Bay Light, Heat and Power Co., North Bay.	250 50
	Provision of apparatus, &c.....	.....	.....	417 97
Parisienne, Ile..	Completion of the erection of a reinforced concrete tower, double dwelling, fog alarm building, oil store and boat house (commenced 1911-12).	Contract.....	Wm. Fryer, Collingwood.	8,150 00
	Installation of a 2nd order dioptric illuminating apparatus.	Day's labour....	J. Haggarty.....	1,540 56
	Installation of a Class 'D' diaphone and duplicate plant.	"	J. Montgomery.....	
Port Arthur....	Establishment of a light shown from a lens lantern on the Thunder Bay elevator.	Contract.....	Thunder Bay Elevator Co.	33 16
Portsmouth. ...	Completion of work of erecting range lights which was started last year.	Day's labour....	M. J. Egan.	61 49
Red Rock	Installation of a 1½-in. diaphone plant.	"	J. Montgomery.....	290 99
Rondeau.....	Expenses in connection with erection of concrete beacon completed last year.	"	T. H. Brewer.....	7 84
Shaganash....	Establishment of a hand fog horn.	.....	.....	15 00

SESSIONAL PAPER No. 21

ONTARIO (including Northwest Provinces)—*Continued.*NEW AIDS TO NAVIGATION—*Concluded.*

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Toronto harbour, west entrance.	Erection of a reinforced concrete lighthouse as a front light and the installation of a 6th order dioptric illuminating apparatus; also the erection of a 2-section steel skeleton tower with wooden watchroom and lantern and the installation of a 5th order dioptric illuminating apparatus as a back light.	Day's labour. . . .	T. H. Brewer.	3,247 06
	Provision of the steel skeleton tower.	Furnished under general contract.	Goold, Shapley & Muir, Brantford.	377 85

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Badgeley island.	Completion of work of erecting range lights started last year.	Day's labour. . . .	J. Fitzpatrick	124 41
Boyd island. . . .	Purchase of site for lighthouse purposes.	.....	.....	50 00
Clapperton island.	Illuminating apparatus improved by the installation of a 6th order dioptric lens.	Day's labour. . . .	J. Fitzpatrick	362 00
Coteau landing. .	Moving lighthouse and gas tanks.	"	M. J. Egan.	25 50
Fort William. . .	Construction of an inclosed wooden tower to replace pole light.	Contract.	C. L. McCool, Fort William, Que.	810 37
Gimli, Manitoba	Moving lighthouse to new site. .	"	Buchanan & Fraser. . . .	115 43
Hog island. . . .	Expenses in securing site for lighthouse.	.....	.....	25 10
Lamb island . . .	Construction of a new boathouse 30 ft. by 14 ft. and installation of winch.	Day's labour. . . .	T. H. Brewer.	856 83
Lonely island. . .	Purchase of site for lighthouse purposes.	.....	.....	172 00
Mississagi strait.	Completion of repairs to wharf started last year.	Day's labour . . .	Lightkeeper.	348 55
Niagara-on-the-Lake.	Repairs to the foundation of the fog-alarm building.	"	T. H. Brewer.	206 22
Oakville.	Illuminating apparatus improved by the installation of a 4th order dioptric lens; work will be completed next season.	"	S. Nieforth.	700 46
Parry Sound Agency.	Repairs and alterations to the warehouse, the erection of a flag staff and the fitting up of a yard derrick.	"	J. Fitzpatrick	645 98
Peter Rock. . . .	Illuminating apparatus improved by the installation of a 4th order dioptric lens with a 35 m/m burner.	"	S. Nieforth.	82 84
Port Dalhousie. .	Installation of an oil engine plant to replace the electric fog alarm.	"	J. Montgomery.	1,082 40
	Provision of two vertical engines.	.....	A. Meitz, N.Y.	

ONTARIO (Including Northwest Provinces.)

CHANGES AND IMPROVEMENTS IN EXISTING AIDS—*Concluded.*

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Port Dalhousie, back light.	Fitting up of an occulting machine for the illuminating apparatus.	Day's labour....	S. Nieforth.....	609 07
Port Dalhousie, front light.	Improvement to the illuminating apparatus by the installation of a 4th order dioptric lens in lieu of a 6th order lens.	"	S. Nieforth.	
Prescott, Dominion Lighthouse Depot.	Material purchased for stock to be transferred and charged to the several light stations, the construction of a brass foundry, pay of staff and upkeep of depot.	.....	.....	98,099 48
	Acquisition of additional property adjacent to depot purchased from the Canada Starch Co. and J. D. Dowsley.	.....	.....	47,500 00
Presqu'île range lights.	Repairs to foundations of the three towers (will be completed next year).	Day's labour....	M. J. Egan.....	1,224 41
St. Catharines..	Repairs to fog-alarm machinery.	Day's labour....	J. Montgomery....	47 03
Saugeen river...	Illuminating apparatus improved by installation of a reflector in the back light, and a 5th order dioptric lens in the front. Will be completed next season.	"	S. Nieforth.....	434 16
Snake island...	Repairs to light-house tower...	"	M. J. Egan	952 91
Thunder cape...	Repairs and changes to fog-alarm resonator.	"	Lightkeeper.....	209 21
Toronto, Eastern gap.	New motors for fog-alarm plant and general overhauling.	"	J. Montgomery.....	677 89
Western islands.	Provision and labour of material for derrick.	"	Prescott workshop	755 25
Miscellaneous expenses.	Materials, etc., in connection with the establishment of buoys and beacons.	.....	.....	5,163 14
	Travelling expenses of officers, salaries and expenses of temporary help, erectors, etc.	.....	.....	7,360 81
	Total expenditure in Ontario	.....	.....	\$197,624 84

BRITISH COLUMBIA.
NEW AIDS TO NAVIGATION.

Bonilla island ..	Preliminary expenses in connection with the establishment of a lighthouse, dwelling, &c. Work will be started next year, 1913-14	.....	.....	507 60
Burnaby shoal..	Construction of a float, supporting a bell and an electric light	Day's labour....	Service boats	1,245 75

SESSIONAL PAPER No. 21

BRITISH COLUMBIA—Continued.

NEW AIDS TO NAVIGATION--Continued.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Charles point...	Erection of a 20-foot wooden framework supporting a mechanical fog-bell.	Day's labour ...	Sub-agent, Prince Rupert	141 49
Cracroft island...	Erection of an unwatched acetylene beacon.	" ...	Crew of SS. <i>Grainer</i>	99 60
Fraser River Sand Heads lightship.	Purchase of schooner <i>Bayard</i> to be used as a lightship replacing Fraser River Sand Heads lightship.	.....	.....	4,500 00
Herbert reef....	Installation and erection of automatic acetylene beacon.	Day's labour...	A. H. Johnston.....	320 73
Holland island...	Erection of a combined dwelling, fog alarm and light house on concrete pier. Inspection, travelling expenses, davits, &c.	Contract.....	J. Hilditch.....	14,925 46
Langara.....	Erection of a 30-foot reinforced concrete tower, fog-alarm building, double dwelling, boat-house and outbuildings.	Day's labour...	R. Chrystal.	31,410 89
Masset.	Purchase of site for lighthouse purposes.	.....	.....	250 00
McLoughlin pt..	Erection of a standard fog-alarm building and installation of machinery (balance from last year).	Day's labour....	J. Robinson	115 12
Mudge, Cape....	New dwelling, oil shed, fog-alarm building and installation of class 'C' duplicate diaphone plant, and type 'F' diaphone.	" ...	A. Fairfull.....	8,580 04
Prince Rupert..	Establishment of a dépôt, comprising dwellings, workshops, machinery and a deep-water wharf. This completes work started last year.	Contract.. ...	Pacific Coast Construction Co.	19,232 10
St. James, Cape.	Provision of a 10-foot lantern. Work will be put under way next season for the establishment of a new station.	Furnished under general contract.	J. Inglis Co., Toronto...	2,745 00
Separation point	Erection of an unwatched acetylene beacon.	Day's labour....	Crew of C. G. S. <i>Quadra</i> .	64 41
Sheringham pt..	Erection of a 40-foot reinforced concrete tower, wooden dwelling, boat-house, oil-shed.	Contract.....	T. Stedham.....	8,457 00
	Provision of a 7-foot lantern. ...	Furnished under general contract.	J. Inglis, Toronto.....	7,609 50
	Provision of third order triple flashing optic and freight.			
	Installation of apparatus, inspection, travelling and other expenses.	Day's labour....	L. Cullison.	4,898 49

BRITISH COLUMBIA.—*Continued.*

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Light Station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Atkinson, point.	Erection of a 100-foot concrete tower double dwelling, fog-alarm building and out-houses.	Contract.....	W. H. Rourke, Vancouver.	14,684 00
	Installation of the fog-alarm machinery, and the illuminating apparatus.	Day's labour....	W. H. Peter A. Fairfull.....	3,185 77
	Inspection, travelling and other expenses.			
Beale, cape.....	Erection of double, wooden dwelling. Will be completed next year (1913-1914.)	Contract.....	J. Charlesworth.....	1,519 20
Ballenas	Erection of a new dwelling.....	} Day's labour..	F. Swank..... W. H. Peters... ..	2,528 45
	Installation of fog alarm machinery.			
	Travelling and other expenses..			
First Narrows..	Incidental expenses in connection with proposed installation of fog-alarm machinery and erection of building.	.....	.....	14 70
Fraser river Sand Headlightship	Installation of 1" diaphone and plant.	Day's labour....	W. Peter... ..	1,983 74
	Provision of air compressors....	Contract	A. Mertz, New York....	1,082 40
	Provision of 1" diaphone; also alteration and fitting up new lightship.	Furnished under general contract	Canadian Fog Signal Co., Toronto.	418 89
Ivory island....	Duplication of fog-alarm machinery.	Day's labour....	J. Halkett.....	567 55
Maud island....	Beacon moved to a new location	" .....	.....	177 12
McLouglin, pt..	Repairs to lighthouse and erection of stairway.	"	W. L. Stamford.....	115 12
Pachena point .	Erection of an oil store and repairs to derrick.	Day's labour ...	H. Woods... ..	553 41
Portlock point..	Completion of work of erecting boathouse and boatways started last year.	"	J. Ford	178 18
Prince Rupert..	Installation of electric lights, pay of staff, upkeep of depot and other expenses incidental thereto.	.....	.....	7,766 29
Prospect point..	Fog-bell replaced by a 10,000 blow bell, with mechanism.	Day's labour....	Lightkeeper	792 57
Race point.....	Light improved by the installation of a 5th order dioptric lens, also minor changes in tower.	"	C. Fischer.....	309 11
Sisters.....	Installation of fog-alarm machinery.	"	Wm. H. Peter.....	435 43
Somass river....	Re-erection of four pile dolphins.	Contract.. ..	R. H. Wood.....	31 05

SESSIONAL PAPER No. 21

BRITISH COLUMBIA—Continued.

CHANGES AND IMPROVEMENTS IN EXISTING AIDS—Concluded.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Triangle island.	Repairs to smoke stack, windows, etc.	Day's labour.....		374 35
West coast trails.	For work done during season, see special report.	"	{ W. H. Smith..... D. M. Robertson.... J. Nicholson	14,017 08
Yellow island...	Duplication of fog-alarm machinery.	"	Wm. Peter	671 90
Yuquot.....	Completion of the erection of boatways started last year.	"	J. Cullison	90 75
Miscellaneous expenses.	Materials, etc., in connection with the establishment of buoys and beacons.	.....		4,452 93
	Salaries of foremen, travelling expenses of local officers, etc.	.....		5,539 77
	Total expenditure in B.C....	.....		166,522 27

HEADQUARTERS.

Miscellaneous expenses.	Including travelling expenses of officers, blue print work, unforeseen office expenses, photographic work, &c.		5,234 10
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RECAPITULATION BY PROVINCES.

Nova Scotia	\$ 93,156 89
New Brunswick.....	9,774 86
Prince Edward Island.....	2,028 83
Quebec district.....	113,302 17
Montreal district.....	53,270 46
Ontario and the Northwest.....	197,624 84
British Columbia	166,522 27
Headquarters.....	5,234 10
Grand total expended.....	640,914 42

CHIEF ENGINEER'S OFFICE,
DEPARTMENT OF MARINE AND FISHERIES,
OTTAWA, April 1, 1913.

E. and O. E.,
WM. P. ANDERSON, M. Inst., C. E.,
Chief Engineer.

4 GEORGE V., A. 1914

ENCLOSURE B.

DOMINION LIGHTHOUSE DEPOT,
PRESCOTT, ONT., July 7, 1913.

The Chief Engineer,
Marine and Fisheries Department,
Ottawa, Ont.

SIR,—I beg to submit for your consideration, annual statements of the Dominion Lighthouse Depot at Prescott covering fiscal year ending March 31, 1913.

1st. Statement detailed sales at Dominion Lighthouse Depot, amounting to \$155,612.47.

2nd. Statement detailed expense for Dominion Lighthouse Depot, amounting to \$52,404.62.

3rd. Statement showing apparatus and material shipped to the various points throughout the Dominion. This statement also covers the amount of carbide and blaugas used.

4th. A general report on all shop work, made by Mr. A. T. Thompson, resident engineer at this depot. This statement deals with the work performed in the different departments, which includes drawing office and test room.

Your obedient servant,

JOHN R. TAYLOR,
Officer in Charge.

MEMO FOR MR. TAYLOR.

In accordance with your instructions, I humbly submit the following report on the general work carried out at this depot during the fiscal year, 1912.

On my appointment as resident engineer, I took charge of the construction work in all departments, under your direction, the following being a summary of the work done by each of the departments:—

PHOTOMETRIC AND TESTING ROOM.

Under my direct supervision, during the year, a great many photometric and endurance tests were carried out.

Experimental tests were made of various lighthouse apparatus; also tests of lighthouse paints and lighthouse illuminating and fuel oils.

Examinations were made of all lighthouse apparatus shipped from this depot to the various light stations. Pictures were made of all apparatus examined or tested, copies of which, together with the examinations, were forwarded to the chief engineer's office.

The gas buoy inspection records were kept and the necessary quarterly reports furnished on same.

MACHINE SHOP—DEPARTMENT 25.

Our machine shop was extremely busy throughout the fiscal year in preparing the machine work required for all new lighthouse apparatus sent out to the various

SESSIONAL PAPER No. 21

light stations, also in making repairs to the old apparatus sent in from various stations, some of which were returned and some placed in stores, as directed.

The following large apparatus were prepared and completed, or almost completed, for stores and various light stations:—

Four 3rd order Chance model clock-work and pedestal apparatus.

One 2nd order Chance model clock-work and pedestal apparatus.

One 3rd order Chance low model clock-work and pedestal apparatus.

Twelve 4th order spring occulting machines, and numerous other forms of smaller apparatus.

Nearly all parts of Diamond and Chance installations, such as burner covers, vapourizing tubes, valve connections, fittings, etc., were partially made up by this department and forwarded to the copper shop for brazing and completion.

The necessary repairs and alterations, calling for machine work, to the steamers, *Lambton*, *Bayfield*, *Scout* and *Reserve*; repairs to all machinery for plant, and the general steamfitting for the depot and Government steamers were done by this department.

DEPARTMENT 24.

The work under the following headings has been carried on by department 24, which has been extremely busy during the past year: Copper and tin shop, vapour testing room, erecting and assembling room, shipping floor.

Copper and Tin Shop.—This shop has been very busy repairing buoy lanterns and preparing new parts for same, doing the general sheet copper work on all apparatus, and in making up and brazing copper and brass parts for vapour installations.

All catoptric apparatus were prepared in this shop, also the brass and copper work for the depot and Government steamers, as well as all tin and galvanized iron work, such as pails, lighthouse funnels, measures, ventilators, etc.

Vapour Testing Room.—All vapour installations and parts of same and all other forms of burners were carefully tested in this department before being shipped to the various light stations or agencies.

Erecting and Assembling Room.—In this branch the work of testing and properly focusing all dioptric and catoptric apparatus was carefully performed.

Endurance tests were made of all forms of clock-work apparatus prepared for shipment or received for stores. Many lighthouse lanterns and apparatus were carefully set up, fitted and put in good condition before being packed for shipment. From this department, erectors were sent out to the various light stations.

Packing and Shipping Room.—The work performed in the packing and shipping branch, covered the careful packing and checking of all apparatus and material received at or delivered from this depot.

BLACKSMITH SHOP—DEPARTMENT 23.

The work performed in this shop during the past year consisted mainly of preparing buoy and other superstructures, the repairs to damaged superstructures from time to time and the making of all forms of shackles, from $\frac{1}{2}$ -inch to 2 inches in diameter, of which hundreds have been prepared for stores during the year.

A large number of swivels, drop buoy irons, anchor bails, etc., were prepared for stores; forgings of all apparatus required in the machine shop and the tempering of all tools were also done by this department, as well as the necessary forgings for plant, Government steamers and stores.

4 GEORGE V., A. 1914

CARPENTER SHOP—DEPARTMENT 21.

The work performed in this department during the past year included the general repairs to buildings at this depot, repairs to the steamer *Lambton*, general repairs to Government steamers, the making of filing cabinets, draughting tables and clock cases, also the repairs to the buildings at the various light stations in this division.

All material for the light-keeper's dwelling at Red Horse Rock was prepared during the winter. The painting of buildings, fences, Government steamers, superstructures and apparatus was also done by this department.

SHIPYARD—DEPARTMENT 30.

In this department during the past year, all the heavy yard work was done, as in the case of handling gas and spar buoys, derricks, lumber and heavy stores. The scraping and painting of gas buoys, the dressing of spar buoys and the preparation of all concrete anchor blocks were also done.

The former coal hopper bins were torn down and a new coal platform made near the dock; also the old flag pole on the dock was removed and placed near the street.

The handling of all heavy material and apparatus for stores was looked after by this department, as well as the teaming of all material in and out of the depot, the teaming of coal to the boiler house, the unloading of coal at the dock and the general cleaning up and proper storing of all material in the yard.

PATTERN—DEPARTMENT 22.

In this department, the following sets of patterns were prepared during the past year:—

First, second and fourth order low model apparatus patterns.

Patterns for the steamer *Lambton* and other Government steamers.

Patterns were also made for the plant, lighthouse towers, bell buoys and various other apparatus.

All patterns, on removal to the new pattern room, were carefully overhauled and arranged in good order by this department.

GAS BUOY AND LANTERN TESTING DEPARTMENT.

During the past year, in this department, considerably over 100 buoy lanterns were carefully overhauled, repainted and tested for this division, Amherstburg, Port Arthur, Sault Ste. Marie and various other agencies.

New buoy lanterns were prepared from parts of totally damaged lanterns received from time to time. Experiments were made with several forms of acetylene and blaugas burners, and the general gas work on buoys was performed by this department.

The acetylene lighting system and the air system were kept up, and the repairs and alterations to the piping for same were done by this department. Erectors were also sent out from time to time to light stations in this division and to all gas beacons on the lower lakes.

DRAWING OFFICE.

Thirty drawings were made during the year. Some of them were forwarded to the office of the chief engineer of the department at Ottawa; the others, being shop drawings, were kept on file at this office.

A number of shop sketches were made from the blueprints received from the department from time to time.

During the year, a new system of checking, keeping tab on and inspecting patterns was introduced, and Mr. Chabot was given charge of it.

SESSIONAL PAPER No. 21

List of Drawings.—Plan of cabin, steamer *Lambton*, hose connection for Blaugas manifold; double flame burner with adjusting screws for Blaugas, drawing showing method of installation of Grenville alarm bell, Toronto west gap; design submitted for approval, of a 3rd order apparatus, low pattern; design of modified ball race for Sable island; drawing of C. I. platform for 5th order pole light for North Bay assembly drawing of North Bay pole light, showing modifications in order to provide proper ventilation for Duplex emergency lamps; design of 50 c.p. electric pole light with 22-inch diameter parabolic reflector, for Sydney; proposed fireproof oil store for Prescott L. H. depot; oil pumping installation for lighthouses, and details; design of flag pole, L. H. depot; design of double reflector electric light for St. John, N.B.; drawing of hand winch on 8-ton derrick; riser for spring clock pedestal; drum for hand derrick for Prince Rupert, B.C.; flange for lighthouse nailing standards; design of pedestal to be made to different heights for 4th order lenses; hand winch for hoisting Piper lantern, St. John, N.B.; arrangement of lantern hoist, St. John, N.B.; experimental model clock; experimental model clock, design of Ball race; steamer *Scout*, spring locking arrangement for reversing lever; design of air pressure pump for testing buoy floats; detail drawing of 25 m/m oil vapour burner (Diamond).

An average of two blueprints was taken from each tracing made, for the use of the shop and office record, estimates giving the cost of different jobs were prepared and the estimated weight of bronze castings required in connection with the construction of the different types of lighting apparatus was furnished.

All the tracings which had accumulated in the office since it began operation were forwarded to Ottawa to be filed in the chief engineer's office.

During the month of November, Mr. Chabot was instructed to proceed to Sorel.

In conclusion, I may say that, although several of the departments have been very much cramped for room, and the machine shop and some of the other departments short of some very efficient and necessary machinery, the work performed by the different shops at this depot, in my opinion, has been very satisfactory.

ARTHUR F. THOMPSON.

PRESCOTT, June 30, 1913.

APPENDIX No. 2.

ANNUAL REPORT OF THE COMMISSIONER OF LIGHTS.

To the Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the tenth annual report of this branch. The principal work performed has been an extension of the gas buoy and beacon service throughout the various provinces, together with the maintenance of lights and other aids to navigation throughout the Dominion. The operations of the branch are set forth in tabular form in the following five enclosures, namely:—

Enclosure No. 1.—Statement by provinces, showing the number of lights of the several orders, lightships, lightboats, lightkeepers, fog-alarm stations, warning buoys and submarine bells.

Enclosure No. 2.—Statement showing the names of lightstations and lightkeepers.

Enclosure No. 3.—Statement giving a complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13.

Enclosure No. 4.—Statement showing new buoys and beacons established and withdrawn; also changes in present floating aids to navigation.

Enclosure No. 5.—Statement by localities giving the number of unlighted buoys, stakes and bushes maintained throughout the Dominion during the fiscal year ending March 31, 1913.

In conclusion I desire to express and record my appreciation of the able assistance rendered by my staff, and the untiring application to duty exhibited by each member. It would not have been possible to carry out the large and increasing amount of work which is devolving upon this branch without the co-operation of all the officers connected with it.

I have the honour to be, sir,
Your obedient servant,

J. G. MACPHAIL,
Commissioner.

Office of the Commissioner of Lights,
Department of Marine and Fisheries,
Ottawa, April 1, 1913.

SESSIONAL PAPER No. 21

(ENCLOSURE No. 1).

STATEMENT, by provinces, showing the number of lights of the several orders, lightships, lightships, lightkeepers, fog-alarm stations, warning buoys and submarine bells.

	1st order lights.	2nd order lights.	3rd order lights.	4th order lights.	5th order lights.	6th order lights.	7th order lights.	Pressed lens lights.	Catoptric lights.	Electric bulb lights.	Total.	Lightships.	Lightboats.	Lightkeepers.	Fog alarm stations only.	Diaphones.	Fog guns and bombs.	Fog horns and trumpets.	Fog whistles.	Sirens.	Fog bells.	Hand fog horns.	Hand fog bells.	Gas buoys.	Whistling buoys.	Bell buoys.	Submarine bells.	
New Brunswick.....	...	2	4	15	12	10	64	10	33	1	151	1	1	124	4	7	...	4	2	...	...	4	17	...	17	3	11	1
Nova Scotia	4	4	9	27	20	32	68	25	100	5	29	2	...	271	2	16	1	2	5	...	...	6	57	...	41	19	48	4
Prince Edward Island.	...	...	...	12	2	...	3	5	55	1	78	...	...	50	...	1	1	1	...	...	...	2	...	6	2	2	...	...
Quebec.....	5	7	14	18	6	15	44	22	78	1	210	5	...	165	3	21	7	1	4	1	...	21	3	47	3	3	3	4
Montreal.....	...	...	...	10	5	2	38	32	114	...	20	2	...	141	...	...	...	...	...	...	...	...	...	73	...	...	...	...
Ontario. ....	...	6	7	41	13	18	122	35	88	3	333	1	...	199	...	25	...	1	3	1	6	40	...	96	...	4	1	...
Manitoba.....	...	...	...	1	2	...	4	...	4	...	11	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...
British Columbia	4	1	4	6	10	3	65	14	4	4	115	1	...	63	3	19	...	2	...	...	10	8	...	19	2	3	...	...
Total	13	20	38	130	70	80	408	143	476	15	1,393	12	1	1,020	12	89	9	11	14	2	26	145	3	299	29	71	10	

Besides the foregoing, there are maintained on stakes or piles the following number of lights in Ontario:—

Detroit river, 35.
Rideau river, 133.

(ENCLOSURE No. 2.)—STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.

NEW BRUNSWICK AGENCY.

Name of Station.	Name of lightkeeper.	Appointed.	Salary.	
			\$	cts.
*Anderson Hollow breakwater.	J. E. Moore.....	Jan. 16, 1911..	140	00
Bathurst range	G. C. Sutherland.....	Mar. 20, 1882..	320	00
Barnes point	C. W. Barnes.	Aug. 16, 1911..	150	00
Belloni point.....	E. H. Egan.....	May 17, 1892..	220	00
Belyea point.....	Mrs. Westfield Day.....	Oct. 19, 1906..	140	00
*Big Shippigan.....	L. DeGrace.....	June 29, 1910..	350	00
*Bliss island.....	J. H. McLeod.....	Oct. 17, 1900 ..	600	00
Bridges point	A. B. Bridges.	Oct. 23, 1911..	125	00
Buctouche bar.....	J. P. Cormier.....	July 26, 1902..	320	00
Buctouche range	H. B. Robicheaux.....	June 21, 1884..	260	00
Buctouche inner range	D. O. Maillet.....	July 7, 1883..	260	00
Campbellton range.....	P. McLean.....	Dec. 11, 1912..	140	00
Caraquet island.....	G. Lantaigne.....	June 16, 1888 ..	320	00
Caraquet range (front).....	J. O. Chaisson.....	May 11, 1912..	100	00
Caraquet range (back).....	P. L. Legere.....	Oct. 14, 1903 ..	120	00
*Cassie point.....	P. D. Legere.....	June 21, 1909..	365	00
Cedars.....	J. E. Gagnon.....	May 4, 1912..	120	00
Cherry island fog bell.....	H. Chaffey.....	Aug. 7, 1903..	260	90
Cocagne range.....	D. Gagnon.....	Oct. 14, 1907..	220	00
Cox point.....	A. McBaine.....	May 6, 1898..	140	00
Dalhousie harbour.....	J. Arsenault.....	June 18, 1894..	180	00
Dalhousie island.....	H. A. McNeill.....	Aug. 17, 1880..	380	00
*Dipper harbour.....	F. Belmore.....	Mar. 12, 1895..	180	00
*Drews head.....	J. M. Eldridge.....	May 2, 1904..	380	00
Duck island, Big.....	R. Burnham.....	June 25, 1906..	880	00
Enrage, Cape.....	J. G. Barbour	May 11, 1888..	980	00
Escuminac.....	K. R. McLennan.....	May 7, 1892..	1,180	00
Fanjoy point.....	W. C. Kennedy.....	Jan. 17, 1912 ..	120	00
Flewelling landing.....	M. Flewelling.....	April 20, 1890..	140	00
*Folly point	A. P. Belliveau	June 23, 1905..	320	00
Fox island ranges.....	G. Mills.....	June 23, 1897..	320	00
Gagetown.....	C. Brooks	Mar. 20, 1912..	120	00
Gannet rock.....	A. Wilson	Dec. 3, 1912..	1,200	00
Glenwood.....	E. D. Whelpley.....	May 7, 1912..	80	00
Goose lake	C. Brune.....	Jan. 25, 1913..	320	00
*Grand harbour	F. J. Martin.....	Aug. 5, 1912..	520	00
Grant beach range.....	W. A. Davidson.....	April 3, 1909..	210	00
Great Salmon river.....	R. Connolly	Feb. 26, 1913..	80	00
*Green head.....	T. E. Looney.....	July 1886..	220	00
Greys point	B. F. McCutcheon.....	Mar. 6, 1907..	120	00
Grindstone island	E. C. Peck.....	April 27, 1912..	880	00
Gull cove.....	L. Frankland.....	Nov. 14, 1902..	140	00
Hampstead wharf.....	W. Vanwart.....	Mar. 20, 1912..	120	00
Harper point.....	J. H. Blakeley.....	July 30, 1910 ..	130	00
Hatfield point.....	O. E. Davis.....	Dec. 24, 1912..	120	00
Hay island range.....	J. Allain	May 21, 1895..	260	00
*Head harbour.....	C. D. Hilyard	May 5, 1907..	1,180	00
Hendry farm.....	A. M. Hendry	April 28, 1899..	140	00
Heron island	J. A. D. Robertson.....	April 1, 1902..	320	00
J. mseg.....	W. Sharp	Oct. 24, 1912..	120	00
Jourimain.....	A. J. P. Bent.....	Jan. 25, 1901..	440	00
Kouchibouguac ranges.....	H. Cognen.....	June 26, 1908 ..	260	00
Lepreau.....	R. L. Belding (lightkeeper).....	June 30, 1905..	480	00
	F. Frauley (engineer).....	June 30, 1905..	960	00

*\$25 for operating fog horn or bell

SESSIONAL PAPER No. 21

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

NEW BRUNSWICK AGENCY—Continued.

Name of Station.	Name of lightkeeper.	Appointed.	Salary.
			\$ cts.
Letite.....	S. Dines.....	Mar. 27, 1907..	780 00
Little Belledune.....	J. A. Roberty.....	Feb. 21, 1905 ..	380 00
Long Eddy point.....	G. F. Tatton.....	Oct. 16, 1886..	980 00
Lo g point.....	R. Bates.....	Aug. 19, 1912..	120 00
Machias Seal island.....	W. L. Harvey.....	July 8, 1904..	1,440 00
McFarlane point.....	A. Macfarlane	Dec. 3, 1909 ..	115 00
McMann point.....	H. R. McMann.....	Nov. 2, 1901..	140 00
Marks point.....	W. Maloney	Nov. 7, 1903..	220 00
Middle island.....	M. Murray	April 10, 1902..	320 00
Midjik bluff.....	A. Henderson.	Oct. 4, 1894..	200 00
Miscou gully.....	R. McConnell, Jr..	Sept. 9, 1897..	180 00
Miramichi lightship.....	R. McLean.....	April 12, 1902..	980 00
Miscou island	J. A. Ward.....	Sept. 28, 1912..	880 00
Monckton, Fort.....	C. Silliker	May 27, 1912..	120 00
Mulholland point.....	A. Parker	June 13, 1901..	260 00
Musquash island.....	E. M. Akerley	Mar. 4, 1912 ..	140 00
*Musquash.....	C. P. Hamm.....	Jan. 14, 1870..	440 00
*Navy bar.....	J. Kilpatrick.....	Dec. 26, 1906..	600 00
Negro point.....	E. Ross.....	Mar. 5, 1878..	600 00
Neguac range	J. Robinson.....	June 15, 1912..	260 00
Neguac, lower range	C. McIntosh	Dec. 19, 1892..	180 00
Newcastle.....	R. B. Matheson.....	April 18, 1898..	140 00
Oak point, Miramichi.....	J. Bowie, Jr.	June 2, 1906..	180 00
Oak point, St. John.....	Mrs. B. M. Francombe.....	Dec. 20, 1907..	140 00
Oromocto.....	Miss S. J. Brennan.....	Jan. 12, 1910..	170 00
Outhouse point.....	S. Edgett	June 14, 1910..	140 00
Palmer landing	B. R. Palmer.....	Dec. 22, 1911..	120 00
Partridge island.....	H. Andrews.....	Dec. 26, 1906..	1,440 00
*Pea point.....	G. D. Eldridge.....	Jan. 7, 1913..	320 00
Peck point.....	E. Lockhart.....	Aug. 31, 1908..	680 00
Perry point.....	S. T. Lamb.....	Nov. 4, 1911..	125 00
Petit Rocher.....	J. D. Laplante.....	May 16, 1911..	150 00
*Pokemouche	M. Hayden.....	Oct. 17, 1888 ..	380 00
*Pokesudie	W. M. Cormier..	May 24, 1912..	260 00
*Portage island range	P. Morrison, Jr.....	May 17, 1892..	380 00
Preston beach.....	S. Preston	July 11, 1889..	220 00
*Quaco pier.....	W. Calhoun.....	Nov. 13, 1911..	150 00
Quaco west head.....	C. Brown (lightkeeper).....	Nov. 25, 1884..	490 00
	L. B. Bradshaw (engineer).....	Aug. 2, 1887 ..	490 00
Reeds point.....	W. Lamb.....	Feb. 25, 1909..	135 00
Richibucto bar range.....	C. P. Richard	May 24, 1912 ..	220 00
Richibucto channel range	J. Robichaud.....	June 16, 1902..	260 00
Richibucto north beach range	F. McNeill.....	May 3, 1909 ..	250 00
Richibucto head.....	P. F. Richard	May 30, 1895..	320 00
Robertson point.....	C. Dean	Mar. 20, 1912..	120 00
*St. Andrews.....	W. J. Pendleberry.....	April 10, 1889..	380 00
*St. John harbour.....	St John Agency (temporarily)		
St. Louis gully range	D. L. Maillet.....	May 13, 1912..	140 00
Sand point.....	R. Wagner	June 7, 1883 ..	140 00
Savin point.....	D. L. Daigle.....	Aug. 9, 1912..	80 00
Shediac harbour.....	T. Harts	Feb. 17, 1905..	140 00
Shediac island	M. Robinson.....	Dec. 29, 1873..	380 00
Shediac north channel	F. Gould.....	Jan. 13, 1899..	140 00
Sheldrake island	J. A. Morrison	Jan. 31, 1910 ..	365 00
Shippigan gully range.....	J. DeGrace	June 4, 1899 ..	260 00
South Tra adie.....	W. C. Ferguson	Mar. 23, 1898 ..	260 00
*Southwest head, Grand Manan.	T. P. Foster.....	Sept. 26, 1910..	640 00
*Southwest Wolf	E. Wright	Mar. 6, 1906 ..	680 00
Spencer, Cape.....	J. E. Collins (engineer)	June 23, 1908..	828 00
	C. McKee (lightkeeper).....	May 24, 1912..	480 00
Spruce point	Mrs. B. G. Hannah	Sept. 15, 1892..	220 00
Stonehaven.....	Mrs. E. Scott.....	July 8, 1904 ..	180 00
*Swallowtail	G. A. Lahey.....	Oct. 29, 1912..	520 00

* \$25 for operating fog horn or bell.

STATEMENT of lightstations and names of lightkeepers, &c., in the Dominion—
Continued.

NEW BRUNSWICK AGENCY—Concluded.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Swashway range	S. Williston	June 4, 1902.	380 00
Tiner point	A. Splane	Oct. 26, 1905.	980 00
*Tongue shoal	T. Rooney	Dec. 26, 1906.	520 00
Tormentine range, Cape	J. Wall.	June 5, 1912.	180 00
Tracadie	F. D. Basque	Nov. 22, 1909.	380 00
Vin range, Baie du.	J. McLeod	Oct. 13, 1909.	3 5 00
Wilnot bluff.	J. H. True	Sept. 12, 1899.	140 00

NOVA SCOTIA AGENCY.

Abbot harbour	W. H. B'Entremont.	May 22, 1888.	140 00
Aconi point	J. C. Bonner	Nov. 6, 1903.	320 00
Advocate harbour	R. M. Morris.	Sept. 12, 1912.	320 00
Amet island	W. Duncan	July 27, 1912.	520 00
Amherst basin range	W. S. Tait	Jan. 7, 1913.	220 00
Amherst point wharf.	W. A. Downey	May 3, 1909.	115 00
Annapolis.	J. McMillan	Feb. 18, 1908.	140 00
Apple river.	H. E. Elderkin	Mar. 31, 1905.	980 00
Ardoise, Lower (front).	E. Burke	Mar. 27, 1912.	80 00
Ardoise, Lower (back)	A. Birrett.	Mar. 27, 1912.	80 00
Argyle.	C. A. Amiro	Nov. 9, 1897.	600 00
*Arichat.	W. Lavashe	Oct. 17, 1898.	380 00
Arichat, West (front).	E. Delorey	Feb. 20, 1906.	140 00
Arichat, West (back)	M. Gerrior	Feb. 20, 1906.	140 00
Arichat, West wharf.	C. Forrest.	Nov. 8, 1911.	85 00
Arisaig.	H. R. McAdam	Nov. 14, 1895.	180 00
Avon river bridges.	Windsor Electric Co.	June 12, 1906.	200 00
*Baccaro.	H. Ross	Feb. 1, 1913.	520 00
Barrington lightship.	A. N. Crowell	Jan. 7, 1913.	880 00
*Battery point.	I. B. Heckman	Oct. 29, 1912.	380 00
Bass river.	D. Vance	Oct. 24, 1907.	140 00
*Bear island.	M. O'Brien.	Aug. 31, 1906.	380 00
Bear river.	H. Warren	Jan. 7, 1913.	220 00
Beaver harbour.	L. G. Cameron	Feb. 15, 1902.	220 00
Beaver island	T. Sampson	Oct. 13, 1892.	140 00
Beaver island, S.E. coast.	W. E. O'Leary.	Feb. 22, 1900.	1,130 00
Belliveau.	J. H. Belliveau	Feb. 16, 1889.	110 00
Betty island.	P. Christian	June 21, 1904.	680 00
*Bickerton, Port.	T. O'Hara	Jan. 26, 1901.	260 00
Bigelow point range	J. L. Peers	Oct. 7, 1912.	140 00
Blackrock.	C. Robinson	Mar. 16, 1885.	440 00
Blackrock point	M. D. Morrison.	June 8, 1892.	3 0 00
Boars-head	F. Ruggles.	May 24, 1901.	520 00
*Bon portage.	A. C. Greenwood	Jan. 14, 1907.	520 00
Borden wharf	F. R. Clark	April 29, 1904.	180 00
Bourgeois inlet.	D. Sampson	April 12, 1912.	100 00
Brier island	J. M. Peters (lightkeeper).	June 6, 1901.	565 42
	B. H. Morrell (engineer)	June 6, 1901.	614 58
Brooklyn pier	H. Godfrey.	Mar. 25, 1909.	135 00
Budget	S. E. Burns.	Oct. 24, 1912.	260 00
*Bunker island.	F. H. Doane	July 27, 1904.	520 00
Bunker island, N. E.	J. H. Scoville.	Jan. 9, 1907.	320 00
Burntcoat	W. Y. Faulkner	June 22, 1898.	380 00
Campbell island	D. A. McDonald.	July 23, 1911.	190 00
*Candlebox island	B. Le Blanc	Nov. 1, 1892.	440 00
*Canso harbour.	J. Long	Dec. 31, 1896.	440 00
Canso range	W. J. Matthews	Dec. 17, 1904.	320 00

* \$25 for operating fog horn or bell.

SESSIONAL PAPER No. 21

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

NOVA SCOTIA AGENCY—*Continued.*

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.	
			\$	cts.
Canso, North.	R. McKay,	Feb. 4, 1882 ..	440	00
Caribou island	J. A. McFarlane.	May 24, 1912..	440	00
* Carter island.	R. McDonald	Sept. 28, 1896..	380	00
Caveau point range.	N. D. Desveau.	April 27, 1912..	220	00
Charlo harbour range.	A. Richard	Dec. 8, 1911..	230	00
Chebucto head.	R. Holland.	Aug. 31, 1906..	1,180	00
* Chester.	U. Young	Feb. 15, 1884..	600	00
Cheticamp.	D. Deveau.	July 19, 1912..	380	00
Cheticamp harbour range.	M. Roach	Aug. 5, 1912..	220	00
Cheverie.	H. Macumber.	May 27, 1912..	80	00
Church point.	J. H. Saulnier.	Aug. 8, 1878..	260	00
Ciboux	D. Campbell.	Oct. 29, 1912..	520	00
Clarke cove range	A. Campbell.	Sept. 15, 1910..	160	00
Coffin island.	J. E. Wentzell.	June 2, 1909..	580	00
Cold Spring head.	W. VanEmburg.	Oct. 6, 1909..	220	00
Cole harbour range.	G. C. Jamieson.	Oct. 21, 1898..	260	00
Cole harbour.	W. M. Munroe.	April 23, 1907..	120	00
Country harbour.	H. Burke.	June 11, 1902..	600	00
Cranberry island.	J. P. Hanlon.	Aug. 25, 1905..	1,180	00
Crichton head	H. H. Crichton.	May 6, 1874..	320	00
Cross island	C. Whynacht.	June 20, 1910..	1,080	00
Croucher island.	G. Croucher.	Jan. 31, 1883..	440	00
Dartmouth	W. Patterson.	June 3, 1903..	180	00
Devil islands lights.	W. C. Fulker.	May 3, 1886..	680	00
Digby pier.	E. Beamen.	May 29, 1897..	140	00
Dimock point, lights.	Windsor Electric Co.	June 12, 1906..	130	00
Dog island.	S. Joyce	July 4, 1884..	260	00
Dover.	E. Moreash.	Sept. 24, 1906..	320	00
East point harbour.	C. E. Mason.	May 23, 1911..	105	00
Eatonville.	S. Mcaleese	April 26, 1909..	95	00
Economy	E. McLellan.	Mar. 8, 1912..	80	00
* Eddy point.	E. Mundell.	July 28, 1903..	600	00
* Egg island.	H. W. Stoddard.	Mar. 22, 1909..	660	00
Felix, Port.	W. C. Boudrot.	July 16, 1902..	380	00
Fisherman harbour.	T. Beiswanger.	Jan. 19, 1906..	260	00
Flat point	C. M. Peters (lightkeeper).. } D. Campbell (engineer). }	April 13, 1910.. Aug. 12, 1912..	565 42 614 58	
Flint island.	F. Currie.	Oct. 17, 1912..	1,200	00
* Fort point.	J. Misener.	May 16, 1896..	260	00
Forchu, cape.	T. S. Doane	Dec. 31, 1904..	1,180	00
Forchu head.	G. Hardy.	June 16, 1909..	210	00
Freels, cape.	M. Myrick.	Sept. 26, 1910..	1,080	00
Friar head.	M. Doucette.	Nov. 18, 1911..	85	00
Gabarouse.	J. McDonald.	Dec. 10, 1908..	320	00
George, cape.	A. L. McEachren.	Sept. 16, 1898..	680	00
* George island.	R. Ross.	Jan. 17, 1885..	380	00
George, port.	J. C. Anderson.	Mar. 27, 1912..	140	00
Gilbert island.	J. W. Melanson.	Aug. 18, 1904..	300	00
Gillis point.	H. McLean.	Dec. 18, 1897..	260	00
Glace bay (front)	M. McNeill.	Nov. 19, 1907..	140	00
Glace bay (back)	A. McFarlane.	Nov. 19, 1907..	140	00
Glasgow point.	A. Clory.	July 25, 1894..	260	00
Grande Digue.	D. A. Kaulback	Feb. 12, 1909..	115	00
Grand Etang.	S. LeBlanc.	Mar. 25, 1905..	120	00
* Grand Passage.	C. Buckman	Jan. 7, 1901..	380	00
Granville Centre.	H. Roney	Feb. 24, 1904..	140	00
Great Bras D'Or (front).	R. McLennan.	Dec. 11, 1912..	120	00
Great Bras D'Or (back).	A. Fraser.	Jan. 13, 1903..	180	00
Green island.	E. E. Boudrot.	Dec. 3, 1912..	600	00
Green island, Lunenburg.	M. B. Pearl.	Aug. 11, 1908..	680	00

* \$25 for operating fog horn or bell.

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

NOVA SCOTIA AGENCY—Continued.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Gregory island.....	M. Sampson.....	May 11, 1907..	260 00
Greville, Port, range...	E. A. Hatfield.....	June 29, 1908..	320 00
Guion island.	E. Bagnall.....	Dec. 10, 1912..	600 00
*Guysborough harbour.	M. C. Scott.....	April 19, 1884..	320 00
Hll harbour.	E. McDonald.....	Aug. 10, 1911..	190 00
Hampton.....	H. Foster.....	Dec. 2, 1911..	190 00
Harbour island.....	A. I. Luddington.....	Feb. 3, 1912..	380 00
Harbour au Bouche.....	P. Webb.....	Feb. 18, 1896..	380 00
Haute, Isle aux.....	P. E. Morris.....	Aug. 2, 1904..	680 00
Hebert, Port.	W. Burgess.....	July 20, 1892..	260 00
Henry island.....	D. A. McLennan.....	Aug. 3, 1907..	600 00
Herring cove.	P. V. Hayes.....	April 29, 1912..	140 00
Highland village.....	Noble Chisholm.....	Feb. 23, 1912..	80 00
Hobson island.....	N. Mosher.....	Oct. 19, 1912..	380 00
Hocd, Port.	J. A. McDonald.....	May 10, 1880..	380 00
Horton.....	Mrs. S. M. Rathburn.,	Sept. 3, 1879..	380 00
Hubbard cove.....	O. Shatford.....	July 19, 1912..	320 00
Indian harbour.....	H. Boutiller.....	June 6, 1901..	260 00
Ingonish harbour...	S. Hawley.....	Aug. 19, 1912..	220 00
Ingonish island.....	R. F. Warren.....	Sept. 17, 1903..	520 00
Ingonish, south bay....	J. Young.....	July 24, 1912..	80 00
Iona.	F. X. S. McNeil.....	Nov. 16, 1901..	180 00
*Isaac harbour.	I. L. Griffin.....	April 28, 1894..	380 00
Jeddore harbour range.	J. Harpell, Jr.....	Jan. 21, 1901..	320 00
Jeddore rock.....	J. W. Mitchell.....	Sept. 29, 1882..	600 00
*Jerome point.....	J. McAskill.....	July 30, 1901..	380 00
Joggins mines.....	F. Williams.....	May 13, 1912..	180 00
*Jerseyman island.....	A. Theriault.....	May 31, 1905..	440 00
Jor lon.....	D. Wolfe.....	Nov. 4, 1912..	140 00
Ketch harbour.....	C. Martin.....	May 19, 1905..	140 00
Kidstone island.....	D. McRae.....	May 17, 1892..	320 00
*Kingsport.	J. P. Corkum.....	Feb. 19, 1912..	140 00
*Lahave.	W. H. Palmer.....	May 22, 1878..	320 00
Lingan head.	J. Kelly.....	Dec. 2, 1911..	275 00
*Liscomb.....	W. Redmond.....	Oct. 29, 1912..	440 00
Little Dyke.....	J. B. Urquhart.....	April 18, 1912..	80 00
*Little Hope.....	A. Daggat.....	Dec. 11, 1908..	980 00
Little Lorraine.....	P. Gallant.....	Jan. 19, 1900..	180 00
Little Narrows.....	M. Matheson.....	Oct. 19, 1912..	180 00
*Lockeport.....	L. D. Orchard.....	Jan. 1, 1877..	600 00
Lorne, Port.....	C. B. Beardsley.....	Dec. 3, 1912..	320 00
Louisburg.....	W. Cameron (lightkeeper)..	Jan. 15, 1913..	396 95
	D. A. Campbell (engineer)..	May 20, 1902..	1,043 15
Louisburg range.....	T. Connington.....	Oct. 26, 1807..	320 00
Mabou (front).....	J. B. McDonald.....	Sept. 20, 1912..	100 00
Mabou (back).....	R. McLean.....	Dec. 7, 1906..	120 00
McKenzie point.....	H. McRae.....	July 27, 1912..	220 00
*McMillan point.....	A. McMaster.....	May 24, 1912..	220 00
McNab's island.....	M. Lynch.....	June 23, 1905..	440 00
McNeil's beach.....	L. McNeil.....	Aug. 6, 1884..	150 00
*Maine-a-Dieu.....	T. Campbell.....	Aug. 5, 1912..	380 00
*Maitlan t. Port.....	A. J. Sallows.....	Dec. 28, 1900..	260 00
Maitland wharf.....	L. Lawrence.....	Feb. 28, 1911..	85 00
Man-o'-War point.....	M. N. McLeod.....	Jan. 5, 1912..	120 00
Margaree.....	A. Y. McLellan.....	Sept. 12, 1912..	520 00
Margaree harbour (front).	M. A. Dunn.....	May 12, 1903..	120 00
Margaree harbour (back)	R. McLennan.....	June 8, 1901..	120 00
Margaretville.....	J. Cleveland.....	Jan. 15, 1912..	260 00
Marjorie island.....	M. McDonald.....	Sept. 22, 1909..	170 00
*Mary Joseph.....	A. Fancy.....	Oct. 14, 1912..	320 00

* \$25 for operattnng fog horn or b  ll.

SESSIONAL PAPER No. 21

STATEMENT of light stations and names of lightkeepers, etc., in the Dominion.—
Continued.

NOVA SCOTIA AGENCY—Continued.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Masstown.....	G. W. Vance.....	June 29, 1898..	100 00
Mauger beach.....	W. Icton, Sr.....	July 8, 1903..	980 00
Medway.....	S. T. Foster.....	Mar. 20, 1900..	140 00
Medway head.....	Mrs. W. P. Aitkins (temp'y).....	Nov. 2, 1909..	365 00
Meteghan river.....	J. A. Melancon.....	Dec. 7, 1911..	150 00
Minudie.....	F. Vernon.....	May 3, 1909..	95 00
Mitchener.....	J. Smith.....	Sept. 28, 1912..	220 00
*Moser island.....	S. Moser.....	Nov. 6, 1885..	440 00
*Mouton, Port.....	A. H. Cook.....	April 27, 1912..	380 00
Mullins point range.....	J. Mullins.....	June 8, 1892..	520 00
Munroe point.....	F. D. McLeod.....	May 13, 1912..	180 00
Musquodoboit (front).....	J. Kent.....	April 20, 1904..	200 00
Musquodoboit (back).....	A. M. Kent.....	Nov. 20, 1908..	180 00
Negro island.....	B. Nickerson.....	July 26, 1897..	520 00
*Neill harbour.....	G. Sweet.....	Aug. 11, 1911..	230 00
New harbour.....	S. Quick.....	Mar. 5, 1913..	160 00
Noel.....	J. O'Brien.....	Oct. 15, 1912..	120 00
North Cape.....	N. McLeod (lightkeeper).....	Oct. 14, 1899..	550 00
North East harbour range.....	J. G. McAskill (engineer).....	May 29, 1911..	735 00
Or, Cap a'.....	L. Perry.....	June 17, 1899..	220 00
*Ouetique island.....	F. H. P. Dewis.....	April 13, 1898..	380 00
*Owl's head.....	F. A. Burke.....	Feb. 16, 1907..	520 00
*Page island.....	S. W. Blaxland.....	Dec. 2, 1911..	375 00
Parker cove.....	A. M. Powell.....	Feb. 17, 1906..	320 00
*Parrsboro.....	C. Halliday.....	May 30, 1912..	140 00
*Pease island.....	W. J. Simpson.....	Oct. 27, 1911..	440 00
Peggy point.....	T. Baker.....	May 19, 1879..	520 00
Pennant harbour.....	S. H. Garrison.....	Dec. 22, 1902..	520 00
*Petitdegrat.....	P. A. Gray.....	June 30, 1903..	180 00
Pictou bar.....	X. Marchand.....	Dec. 3, 1912..	260 00
Pictou custom house.....	G. Carmichael.....	Nov. 12, 1910..	240 00
Pictou harbour.....	D. Munro.....	July 19, 1912..	120 00
Pictou island, S.E.....	J. Dicks.....	July 19, 1912..	260 00
Pictou island, W.E.....	A. McFarlane.....	June 8, 1892..	600 00
Pictou island wharf.....	C. D. Patterson.....	Mar. 29, 1905..	600 00
Pipercove.....	J. McLean.....	Dec. 22, 1911..	120 00
Pomquet island.....	D. S. McLean.....	July 19, 1912..	180 00
Pope harbour.....	M. Murphy.....	Dec. 18, 1890..	520 00
Portapique.....	J. Abriel.....	Nov. 18, 1911..	35 00
Porter point.....	E. Carr.....	Feb. 20, 1912..	80 00
*Poulamon.....	Frederick W. Bishop.....	April 29, 1904..	180 00
Prim point.....	H. Young.....	Dec. 10, 1912..	300 00
*Pubnico harbour.....	L. M. Ellis.....	Oct. 19, 1912..	980 00
Pugwash.....	G. D. Amiro.....	Feb. 6, 1893..	440 00
*Quaker island.....	C. J. Chapman.....	June 15, 1912..	380 00
*Queensport.....	E. Fader.....	Feb. 9, 1910..	410 00
Race, Cape.....	W. E. Ehler.....	Aug. 13, 1906..	440 00
Red island.....	J. Myrick.....	Nov. 1, 1897..	2,300 00
*Redman head.....	J. P. Campbell.....	Nov. 30, 1901..	180 00
Ronde, Cape la.....	J. Croft.....	Sept. 10, 1909..	250 00
Roseway, Cape.....	J. J. Mauger.....	Nov. 16, 1898..	520 00
Sable, Cape.....	J. L. McKenna.....	Mar. 31, 1899..	1,180 00
Sable island, E.E.....	A. H. Cunningham.....	July 16, 1902..	1,180 00
Sable island, W.E.....	J. Gregoire.....		225 00
*Sable Island, Cape, west head.....	J. Edwards.....		225 00
St. Ann harbour.....	W. B. Smith, Jr.....	April 12, 1890..	320 00
St. Esprit island.....	A. Nicholson.....	June 5, 1905..	260 00
*St. George, Cape.....	A. W. Finlayson.....	April 12, 1905..	680 00
St. Lawrence, Cape.....	John Murray.....	Nov. 3, 1882..	320 00
	C. Jamieson.....	Sept. 21, 1893..	600 00

* \$25 for operating fog horn or bell.

4 GEORGE V., A. 1914

STATEMENT of light stations and names of lightkeepers, etc., in the Dominion.
Continued.

NOVA SCOTIA AGENCY—Concluded.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
St. Mary, Cape.	B. H. Robicheau.....	July 5, 1886..	520 00
St. Paul island, N.E.	W. Giles (lightkeeper)...	Oct. 21, 1907..	600 00
St. Paul island, S.W.	J. McLeod (engineer)	Nov. 1, 1912..	840 00
Salter head	J. Dauphney.....	Sept. 26, 1910..	640 00
Sambro	C. Smith	June 21, 1888..	120 00
Sambro harbour	A. Gilkie	Jan. 8, 1877..	980 00
Sambro inner island	J. H. Finlay.....	Dec. 7, 1899..	180 00
*Sand Spi	E. Smith	Jan. 3, 1908..	180 00
Scatarie	K. D. Butler	Feb. 6, 1913 ..	320 00
Seal island, S.E. coast	J. Nearing.....	May 25, 1912..	1,200 00
Shafner point	J. Crowell	Oct. 14, 1896..	1,180 00
Sharp, Cape	J. K. Kealy	Dec. 17, 1912 ..	220 00
Sheet harbour passage	F. Yorke.....	June 30, 1902..	980 00
*Sheet rock.....	G. W. Wambolt (temp.).....	Dec. 25, 1911 ..	105 00
*Ship harbour.....	S. Kenny.	June 2, 1909..	660 00
Shulie.....	H. Parmer	Oct. 14 1899..	380 00
Sissiboo.....	C. Patterson.....	Oct. 26, 1905..	260 00
Spencer island	L. P. Amirault.....	April 10, 1912..	260 00
Spencer point.....	R. Spicer.....	Oct. 21, 1912..	140 00
Steven point range.....	R. A. Spencer.....	April 1, 1870..	180 00
*Stoddart island	D. Fullerton.....	Oct. 7, 1912 ..	140 00
*Sidney bar.....	E. Larkin	Mar. 18, 1896..	320 00
Sidney range (front)	D. H. McNeil.....	Nov. 16, 1912..	380 00
Sidney range (back).....	J. B. Rudderham.....	June 15, 1905..	380 00
Terence bay.....	A. J. Lewis.	May 2, 1905..	260 00
Three Top island.....	S. P. Slaunwhite.....	Oct. 13, 1903..	180 00
*Torbay.....	H. S. Munroe.....	May 21, 1912..	380 00
Troop point.....	G. A. Shrader.....	May 13, 1912 ..	380 00
Tupper, Point.....	R. F. Schaffner.	Nov. 7, 1912..	140 00
Tusket river.....	D. Gillis.....	Feb. 6, 1906 ..	410 00
Victoria beach.....	S. LeBlanc.....	Aug. 2, 1889 ..	380 00
Wade, Port	S. Haynes.....	April 13, 1912..	140 00
Wallace harbour range.....	H. Bucke.....	" 15, 1912..	120 00
Walton harbour	A. D. Lawson	Jan. 7, 1913..	220 00
*Wedge island.....	S. Brown.....	Dec. 16, 1911..	220 00
Westhaver island.....	W. R. Church... ..	Mar. 22, 1907..	680 00
West Ironbound island.....	A. Stram.....	Sept. 8, 1888..	320 00
*Westport	E. N. Wolfe.....	Dec. 19, 1910..	410 00
Whitehead island	E. W. Suthern.....	April 12, 1890..	520 00
Whynotouch.....	A. Munroe	Jan. 15, 1912..	600 00
Wulville.....	M. Matheson.....	Sept. 11, 1884..	120 00
*Woods harbour	J. L. Franklyn	April 4, 1902..	180 00
Yarmouth Corner beacon	J. Goodwin.....	Aug. 27, 1900..	320 00
	C. J. Hanley	Oct. 17, 1905..	260 00

PRINCE EDWARD ISLAND AGENCY.

Alberton.....	J. A. Leavitt... ..	Nov. 2, 1910..	130 00
Annandale range.....	J. Norton.....	July 12, 1912..	140 00
Bear, Cape.....	H. Hyde.....	July 5, 1912..	440 00
Big Tignish range.....	D. Handrahan.....	Oct. 7, 1912 ..	180 00
*Blockhouse point	N. W. Currie.....	April 27, 1912..	440 00
Brighton beach range	J. Purcell	Dec. 16, 1911 ..	335 00
Brush wharf range.....	F. F. Dreelan.....	Mar. 39, 1912..	100 00
Cardigan river.....	J. W. Morrison	Aug. 15, 1901..	140 00
Cascumpeque.....	D. Fraser.....	" 30, 1912..	380 00
Covehead range.....	J. McCabe.....	Dec. 20, 1911..	125 00

* \$25 for operating for horn or bell.

SESSIONAL PAPER No. 21

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
*Continued.*PRINCE EDWARD ISLAND AGENCY *Continued.*

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Darnley basin range	C. Taylor	June 14, 1897..	120 00
Darnley point range	G. W. Wiggins..	Oct. 16, 1895..	220 00
Douse point range	J. Macdonald.	June 25, 1879..	120 00
East point.	A. C. McIntyre.	April 10, 1912..	380 00
East Souris.	J. D. Lavoie.	June 23, 1905..	520 00
Egmont, Cape	E. J. Arsenault.	Aug. 26, 1912..	320 00
Fish island range	J. A. L. McLellan.	June 29, 1910..	335 00
Georgetown (front).	G. Connor	3, 1901..	220 00
Georgetown (back).	R. Westaway	July 19, 1912..	180 00
Georgetown wharf	S. Hemphill.	Jan. 12, 1913..	140 00
Haszard point range	E. Stewart	June 11, 1910..	290 00
* Indian point.	J. S. Allen.	May 18, 1898..	520 00
Leards range (outer)	A. J. Howatt.	July 22, 1893..	180 00
Leards range (inner).	K. C. Holmes.	May 22, 1912..	140 00
Little Channel range.	W. Hardy.	July 26, 1879..	180 00
Miminegash (front).	P. O'Brien.	May 14, 1897..	120 00
Miminegash (back).	E. Costain.	18, 1906..	120 00
Murray harbour (front).	L. McNeil.	April 17, 1912..	100 00
Murray harbour (back).	R. Penny.	Nov. 11, 1897..	120 00
North point	D. P. McCarthy.	Aug. 5, 1912..	380 00
London, New range.	J. A. Pidgeon	May 24, 1912..	180 00
Northport range.	B. Mountain.	July 13, 1912..	140 00
North Rustico ranges.	L. Blacquire.	April 22, 1912..	180 00
Panmure head light and fog alarm.	W. A. McDonald.	Sept. 28, 1912..	440 00
	M. Condon (Engineer).	Aug. 10, 1908..	490 00
Prim point.	S. A. McLean	July 27, 1912..	380 00
Savage harbour range.	J. A. McDonald.	11, 1889..	180 00
Sea Cow head.	M. P. O'Raneghan.	April 21, 1873..	440 00
Summerside (back).	F. Mutlart	May 3, 1912..	120 00
Summerside (front).	J. Fraser.	April 12, 1897..	180 00
St. Peters island.	J. J. Taylor.	June 15, 1912..	320 00
St. Peters range	J. McGrath.	15, 1912..	180 00
Tracadie range	W. A. McDonald.	Dec. 22, 1911..	150 00
Tryon, Cape	W. Bell	Mar. 17, 1905..	380 00
Warren farm range	C. E. E. Newson.	May 11, 1912..	120 00
West point.	W. McDonald.	Aug. 22, 1876..	440 00
West point wharf.	J. N. Ladner.	Sept. 6, 1912..	120 00
Wood island.	L. Morrow	Oct. 29, 1912..	320 00
Wood island harbour range.	J. Young.	Nov. 14, 1902..	140 00
Wrights range.	C. L. Wright.	June 14, 1894..	180 00

QUEBEC AGENCY.

Amherst island.	C. Cormier.	Mar. 21, 1911..	460 00
*Amherst wharf.	P. J. Brophy.	Nov. 15, 1910..	90 00
Amour point.	T. Wyatt.	Oct. 18, 1889..	1,440 00
Anguille, Cape.	A. Patry.	Oct. 9, 1908..	1,440 00
Anse au Beaufils.	P. J. Ferguson.	May 21, 1912..	80 00
Anse à l'Eau.	A. Gingras.	May 29, 1906..	100 00
*Anse aux Gascons.	J. Mourant.	June 8, 1906..	100 00
Anse St. Jean.	F. Lavoie	Mar. 13, 1889..	100 00
Anticosti, S.W. pt	Z. Lemieux.	July 25, 1900..	880 00
Anticosti, west point.	L. Malouin.	May 24, 1912..	880 00
Bagot bluff.	E. Laprise.	April 18, 1903..	1,180 00
*Barachois de Malbaie.	J. Girard	May 14, 1912..	100 00
*Basse, Pointe.	A. Arseneau.	May 17, 1911..	85 00
Bauld, Cape	E. Fontaine.	July 15, 1905..	1,380 00

* \$25 for operating fog horn or bell.

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

QUEBEC AGENCY—Continued.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.	
			\$	cts.
Basile, Pointe à (front)	E. Douville	Feb. 6, 1901	220	00
Basile, Pointe à (back)	A. Demers	July 22, 1904	220	00
Belier, Ile au	W. Gaudreault	Oct. 30, 1901	190	00
Bellechasse	J. O. Bilodeau	June 15, 1903	520	00
Belle Isle, north end	P. Thomas	July 8, 1904	1,700	00
Belle Isle, S.W	J. Richards	Oct. 7, 1912	1,600	00
Bersimis	H. Grenier	Aug. 8, 1903	180	00
Bicquette island	Mrs. H.N. Lavoie (temporary)		880	00
Bird rocks	E. Bourque	Aug. 5, 1912	1 400	00
Bleue point	A. Tessier	June 9, 1904	100	00
Bonaventure, Little	J. P. Bujold	Feb. 25, 1909	95	00
Bonaventure point	P. Bourdages	July 25, 1903	320	00
Bonaventure river	A. Bourque	Feb. 25, 1909	95	00
Brion island	P. Chevrier	June 23, 1905	600	00
Brandy pots	A. Richard	Oct. 7, 1878	600	00
Brule Cap	F. Filion	Feb. 24, 1912	520	00
Caribou river (front)	H. Simard	Mar. 13, 1905	120	00
Caribou river (back)	J. Savard	July 1, 1892	100	00
*Carleton	L. Bujold	May 25, 1899	440	00
Carleton wharf	F. L. Cullen	July 3, 1907	100	00
Chat, Cap	L. Cote	Dec. 3, 1901	880	00
Chat river	J. Chenard	Dec. 15, 1911	125	00
Chicoutimi	A. Harvey	May 30, 1889	100	00
Cloridorme	J. Francoeur	Dec. 23, 1912	140	00
Clarke city	F. W. Clark	Feb. 10, 1913	80	00
Corbeau, Cap aux	P. Cimon	July 4, 1912	100	00
Coudres, Ile aux	E. Pedneault	April 15, 1912	80	00
Crane island	D. Vezina	April 26, 1904	440	00
Daniel west—Port	I. McKenzie	Dec. 26, 1912	140	00
*Daniel, Port	F. H. Langlois	Feb. 22, 1907	120	00
*D'Espoir, Cape	C. Bourget	Nov. 1, 1897	600	00
Dogs, Cape	L. Bergeron	Sept. 11, 1909	955	00
Domaine (front)	N. Gagnon	April 23, 1912	100	00
Domaine (back)	X. Emond	July 13, 1908	120	00
East cape	G. Sergerie	Nov. 3, 1910	190	00
*Eboulements, Les	T. Tremblay	Aug. 24, 1910	90	00
Egg island	E. Chouinard	May 24, 1911	620	00
Entry island	G. F. Cullins	July 30, 1901	380	00
Escoumains	C. Boucher	Sept. 14, 1911	85	00
Escoumains range	Saguenay Lumber Co	Sept. 1906	150	00
Eskimo point	J. F. Boudreault	Oct. 3, 1907	180	00
*Etang du nord	N. Arseneau	May 16, 1911	460	00
Fame point	J. Ascah	Sept. 2, 1880	1,440	00
Father point	J. Cahill	Mar. 16, 1912	1,200	00
Ferolle point	D. Beaudoin	Oct. 19, 1912	980	00
Flat island	O. Dubois	Sept. 28, 1912	680	00
Flower island	J. Lavallee	April 12, 1905	780	00
Gardien, L'Ange	P. Veznia	Mar. 14, 1912	100	00
Gardien, L'Ange	F. Doyon	April 12, 1912	100	00
Gaspé Cape	J. Smith	Jan. 20, 1912	780	00
Godbout	N. A. Comeau	Mar. 31, 1910	135	00
*Goose cape	W. T. Tremblay	April 4, 1888	380	00
Grand Entry	A. Turbide	April 25, 1907	160	00
Grand isle, Kamouraska	A. Levesque	Feb. 19, 1901	600	00
Grand Pabos	W. McRea	June 4, 1912	80	00
*Grand river	W. Bisson	Oct. 26, 1896	220	00
*Grand river wharf	D. Boutin	April 22, 1912	80	00
Grande Vallee	A. Fournier	Oct. 15, 1904	180	00
Great Fox river	T. Dufresne	Dec. 1, 1911	150	00
Green island	R. W. Lindsay	Sept. 25, 1888	800	00

* \$25 for operating for horn or bell.

SESSIONAL PAPER No. 21

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
*Continued.*QUEBEC AGENCY—*Continued.*

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Green island wharf.....	J. Charron	Mar. 1, 1912..	120 00
Greenly island.....	N. Cote	Aug. 11, 1908..	1,440 00
Griffin cove	H. Boulet.....	July 4, 1908..	180 00
Grosse Roche	Mrs. Morin (temporary).....		500 00
Heath, point	C. Hubert.....	July 27,	980 00
Hospital rock.....	V. Lavoie	Mar. 22, 1909..	365 00
Janvrin and Paddy shoals.....	K. J. Carter.....	April 6, 1911..	190 00
Little Metis	E. Caron.....	May 29, 1906..	580 00
Little Natashquan.....	D. Landry.....	May 13, 1910..	290 00
Long Pilgrim	H. Morin.....	April 29, 1898..	520 00
Magdalen, Cape.....	F. J. Sasseville.....	June 9, 1886..	980 00
Magpie bay.....	A. Dupuis.....	Oct. 22, 1907..	180 00
Martre, Rivière à la	J. Litalien.....	Mar. 5, 1912..	980 00
Matane.....	J. Banville.....	Feb. 1, 1897..	520 00
Mai, Ile de	G. Poulin	Mar. 2, 1912..	190 00
Mistook	J. Fleury.....	Feb. 14, 1912..	140 00
Moisie	A. St. Louis	June 14, 1909..	160 00
Mont Louis	J. Lemieux	Jan. 3, 1912..	140 00
Monts, Pointe des.....	V. Faffard.....	July 10, 1889..	880 00
*Maquereau Pointe.....	A. Bertrand.....	Dec. 21, 1877..	440 00
New Carlisle.....	J. Chisholm.....	Dec. 17, 1908..	100 00
*Newport point	A. David.....	Jan. 20, 1912..	180 00
New Richmond	B. V. Willett.....	Oct. 16, 1903..	140 00
New Richmond wharf.....	W. Campbell.....	Feb. 14, 1910..	90 00
*Noire, Pointe	J. E. Boulianne.....	Jan. 18, 1904..	320 00
Norman, Cape.....	A. W. Campbell.....	July 28, 1911..	1,030 00
Oak point range.....	T. Harper.....	July 24, 1909..	170 00
Orignaux, Pointe aux.	D. Levesque.....	Oct. 5, 1903..	440 00
*Paspebiac.....	J. Loisel	Aug. 27, 1894..	260 00
*Perce.....	F. Bourget.....	Mar. 18, 1893..	260 00
Peribonka, inner and outer range.....	E. Godbeault.....	June 15, 1912..	220 00
Peribonka, middle range.....	F. C. Frasse.....	May 29, 1912..	120 00
Perce wharf.....	P. Levesque.....	May 6, 1912..	80 00
*Péter point.....	J. T. St. Croix.....	Sept. 11, 1909..	580 00
Perroquet island.....	H. Vigneau.....	May 8, 1912..	600 00
Portneuf.....	E. Tremblay.....	May 16, 1903..	440 00
Portneuf range.....	P. Poitras	Oct. 24, 1906..	180 00
Poste St. Martin, front.....	A. Pilote.....	April 22, 1907..	120 00
Poste St. Martin, back.....	A. Tremblay.....	Feb. 4, 1913..	100 00
Quebec harbour lights.....	Quebec Harbour Comm'srs.....		60 00
Ray, Cape.....	E. H. Rennie.....	Oct 19, 1884..	1,380 00
Red islet.....	P. T. Fraser.....	April 12, 1890..	755 00
Red islet lightship.....	J. Irvine.....	Mar. 2, 1900..	3,000 00
Rich point.....	N. Breton	May 16, 1896..	680 00
*Rimouski wharf.....	U. Lavoie	Oct. 24, 1906..	100 00
Riviere du Loup.....	Mrs. Puize (temporary).....		120 00
Riviere du Moulin (back).....	Mrs. L. Goudreault.....	May 9, 1905..	120 00
Riviere du Moulin (front).....	G. Tremblay.....	Sept. 19, 1889..	120 00
Riviere Caribou (front).....	J. Savard.....	July 1, 1892..	120 00
Riviere à la Pipe.....	A. Morin.....	Oct. 3, 1901..	140 00
River Valin (back).....	G. Lavoie.....	June 7, 1909..	90 00
River Valin (front).....	M. Lavoie	June 7, 1909..	90 00
Roberval range.....	Roberval Electric Co.....	June 21, 1898..	100 00
Rosier, Cape.....	E. Costin	Nov. 4, 1890..	1,180 00
Salmon, Cape.....	L. Bouchard.....	May 16, 1896..	980 00
*Sandy Beach point.....	J. E. Ascah	Dec. 2, 1911..	540 00
Savards light.....	D. Savard.....		180 00
Seven islands	H. Demeules.....	July 13, 1909..	1,130 00
Stone Pillar and Algernon rock.....	E. Francoeur.....	Feb. 15, 1912..	780 00
St. Adelaide de Pabos	S. Duguay.....	May 14, 1912..	80 00

* \$25 for operating fog horn or bell.

STATEMENT of light stations and names of lightkeepers, etc., in the Dominion.—
Continued.

QUEBEC AGENCY--Concluded.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.	
			\$	cts.
St. Alphonse wharf.....	P. Tremblay.....	June 19, 1895..	100	00
Ste. Anne de Beaupre (back).....	G. Pare.....	June 28, 1912..	100	00
Ste. Anne de Beaupre (front).....	J. DeBlois.....	July 4, 1912..	100	00
Ste. Anne des Monts.....	F. Henley.....	Dec. 22, 1911..	150	00
Ste. Anne des Monts wharf.....	D. Dugas.....	Oct. 31, 1912..	80	00
St. Antoine (front).....	L. Frechette.....	Aug. 11, 1908..	140	00
St. Antoine (back).....	G. Demers.....	Dec. 7, 1911..	150	00
St. Charles de Caplan wharf.....	U. Dion.....	May 20, 1911..	85	00
St. Charles, Point.....	A. Messier.....	Sept. 30, 1910..	80	00
Ste. Croix.....	W. A. Thurber.....	June 28, 1907..	260	00
Ste. Croix (front).....	T. Croteau.....	Mar. 28, 1901..	120	00
Ste. Croix (back).....	Mrs. D. Racette.....	Dec. , 1890..	120	00
Ste. Famille (back).....	A. Paquet.....	May 17, 1908..	120	00
Ste. Famille (front).....	A. Poulin.....	April 26, 1898..	140	00
Ste. Felicite.....	A. Otis.....	Feb. 1, 1913..	680	00
St. Francois (front).....	F. X. Lamelin.....	April 11, 1912..	120	00
St. Francois (back).....	L. Marceau.....	Jan. 7, 1884..	140	00
St. Francois wharf..	O. Emond.....	Nov. 2, 1912..	80	00
*St. Godfrey wharf.....	J. Joseph.....	May 14, 1912..	80	00
St. Irénée wharf.....	Electric Co.....	1906..	.....	.....
St. Jean.....	A. Laverdiere.....	April 10, 1912..	320	00
St. Laurent.....	T. Coulombe.....	Dec. 23, 1911..	320	00
St. Marys island.....	J. Harbour.....	May 9, 1912..	600	00
St. Omer wharf.....	H. Godbout.....	Feb. 24, 1913..	80	00
St. Thomas de Montmagny.....	E. Nicol.....	April 7, 1910..	130	00
St. Pancras point.....	P. Gravel.....	June 21, 1909..	365	00
St. Petronille.....	N. Ferland.....	Sept. 3, 1901..	320	00
St. Pierre (front).....	A. Asselin.....	Mar. 19, 1912..	100	00
St. Pierre (back).....	J. Roberge.....	May 13, 1908..	120	00
*St. Simeon wharf.....	E. Tremblay.....	Aug. 13, 1912..	80	00
Trois Pistoles wharf.....	D. D'Amours.....	Dec. 21, 1911..	125	00
*Upper Traverse.....	A. Fournier.....	April 14, 1900..	980	00

MONTREAL AGENCY.

Aigle, Ile à l' (front).....	C. Lussier.....	April 16, 1912..	140	00
Aigle, Ile à l' (back).....	O. Beauchemin.....	April 17, 1912..	140	00
Anglais, Pointe aux.....	A. Labrosse.....	July 19, 1912..	260	00
Argenteuil bay range.....	J. Giroux.....	Aug. 6, 1912..	120	00
Ash and Bloody islands.....	G. L. Robinson.....	Nov. 25, 1912..	320	00
Bague, Isle à la.....	E. Thonin.....	May 3, 1912..	220	00
Barques, Ile des.....	Position vacant.....			
Barre à Boulard (front).....	N. Daigle.....	May 28, 1904..	320	00
Barre à Boulard (back).....	O. Lemay.....	Aug. 9, 1912..	120	00
Batiscan (front).....	P. St. Arnault.....	June 20, 1912..	120	00
Batiscan (back).....	B. Duval.....	July 27, 1912..	180	00
Batture St. Antoine traverse.....	A. Colette.....	Nov. 23, 1910..	105	00
Beauharnois range.....	J. Julien.....	Jan. 20, 1912..	260	00
Becancour (front).....	O. Gingras.....	Mar. 15, 1906..	260	00
Becancour (back).....	A. Tourigny.....	Mar. 15, 1906..	180	00
Bellerive Park range.....	C. Roy.....	Jan. 12, 1905..	260	00
Bellevue, St. Anne de.....	J. L. Stocker.....	May 20, 1902..	220	00
Black point.....	J. H. Peters.....	June 1, 1891..	100	00
Blondin, Chute à.....	L. Kerr.....	July 27, 1912..	220	00
Bouchard, Ile (front).....	I. Laporte.....	April 21, 1902..	220	00
Bouchard, Ile (back).....	A. Chicoiné, jr.....	June 16, 1903..	170	00
Boucherville range.....	H. Carrière.....	Aug. 26, 1903..	140	00

* \$25 for operating fog horn or bell.

SESSIONAL PAPER No. 21

STATEMENT of light stations and names of lightkeepers, etc., in the Dominion.—
Continued.

MONTREAL AGENCY—*Continued.*

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Cadieux, Pointe à.....	S. Poirier.....	May 4, 1904..	260 00
Cardinal traverse.....	P. Morin.....	Nov. 22, 1910..	105 00
Caron point.....	C. Proulx.....	May 15, 1912..	100 00
Chambly basin range.....	J. de Senneville	June 24, 1907..	220 00
Chambly canton range.....	J. Savage.....	July 10, 1907..	220 00
Champlain (front)	Mrs A. Charrelrier	July 3, 1912..	120 00
Champlain (back)	C. Marchand.....	June 21, 1912..	140 00
Champlain, upper (front).....	J. Vezina.....	June 21, 1912..	120 00
Champlain, upper (back).....	L. Pothier.....	Jan. 31, 1906..	180 00
Charles, Cape (front).....	A. Boisvert.....	July 23, 1901..	140 00
Charles, Cape (back).....	A. Baron	June 26, 1901..	140 00
Church point traverse St. Antoine (front).....	A. Bouvier	Oct. 6, 1910..	52 50
Church point traverse St. Antoine (back)	F. Messier.....	Oct. 6, 1910..	52 50
Citrouilles, Pointe.....	L. L'Heureux	Mar. 3, 1913..	260 00
Contrecoeur course (front).....	J. Arpin.....	April 22, 1904..	140 00
Contrecoeur course (back).....	O. Gobeille.....	April 22, 1912..	140 00
Contrecoeur Vercheres (front).....	J. B. Gervais	May 13, 1912..	180 00
Contrecoeur Vercheres (back).....	J. Dupuy.....	Nov. 1, 1912..	180 00
Contrecoeur traverse (front).....	P. Piche	April 22, 1912..	140 00
Contrecoeur traverse (back).....	A. Lacroix.....	July 26, 1904..	180 00
Crab island.....	A. Seguin.....	Oct. 29, 1912..	220 00
Deslauriers, Ile (front).....	J. B. Lozeau.....	May 3, 1912..	180 00
Deslauriers, Ile (back).....	A. Desmarais	April 23, 1912..	100 00
Dorval and point Claire.....	B. Gloude.....	Sept. 7, 1872..	400 00
Gallia bay, upper range.....	C. Fleury.....	May 24, 1912..	260 00
Gallia bay, lower range.....	J. Cournoyer.....	July 19, 1912..	260 00
Gentilly (front).....	L. Lebœuf.....	Aug. 5, 1912..	260 00
Gentilly (back).....	D. Mailhot.....	April 2, 1907..	220 00
Georgeville.....	C. E. Martel.....	May 19, 1905..	100 00
Grace, Ile de (front)	B. Raquier.....	July 19, 1912..	260 00
Grace, Ile de (back).....	L. Lavallee.....	May 13, 1912..	140 00
Graham (front).....	X. Sicard.....	April 29, 1905..	100 00
Graham (back).....	E. Lavigne.....	Feb. 16, 1911..	85 00
Green shoal.....	A. Laberge.....	May 20, 1902..	260 00
Grenville ranges.....	W. Davison.....	Mar. 29, 1910..	240 00
Grondines (upper front).....	A. Rivard	Nov. 25, 1912..	220 00
Grondines (upper back).....	J. Sauvageau.....	July 10, 1906..	180 00
Grondines point (front).....	H. Rivard.....	Aug. 30, 1912..	320 00
Grondines point (back).....	F. Hamelin.....	June 21, 1912..	140 00
Guard pier.....	F. St. Aubin.....	Nov. 27, 1912..	380 00
Halfway point range, north of.....	D. Menard.....	May 3, 1912..	220 00
Hebert point.....	X. Hebert.....	Sept. 30, 1910..	105 00
Hochelaga range	U. Paquette	Sept. 1, 1910..	240 00
Jones island	J. Charlebois	April 22, 1909..	135 00
Lachine ranges.....	A. Lizotte, Jr.....	April 27, 1910..	290 00
Lacolle range.....	W. G. Whitman	Jan. 18, 1904..	220 00
Lac, Pointe du	S. Paquin	May 2, 1900..	180 00
Langlais pointe.....	A. Langlais.....	July 11, 1888..	220 00
Laperle traverse.....	A. Laperle.....	Aug. 7, 1912..	100 00
Lavaltrie range.....	S. O. Martineau	Jan. 20, 1912..	320 00
Lead Mines	W. Wheeler.....	June 1, 1891..	100 00
Longue pointe traverse range.....	A. Valiquette.....	Mar. 10, 1910..	200 00
L'Original	G. Seguin.....	May 8, 1894..	180 00
Lotbinière (front).....	Mrs. L. Beaudet	Sept. 3, 1903..	140 00
Lotbinière (back).....	G. Beaudet	Jan. 4, 1883..	140 00
Louiseville range	O. Plante.....	April 19, 1907..	220 00
McTavish point.....	J. Campbell.....	Nov. 18, 1896..	180 00
Madeleine, Cap, lower range (front).....	M. Hebert.....	May 11, 1888..	140 00
Madeleine, Cap, lower range (back).....	T. Arcand.....	June 21, 1912..	140 00
Madeleine, Cap, upper range (front).....	D. Montplasier.....	June 21, 1912..	120 00

* \$25 for operating fog horn or bell.

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

MONTREAL AGENCY—Continued.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Madeleine, Cap, upper range (back).....	L. Loranger.....	June 21, 1912..	140 00
Madeleine, Cap, village.....	T. Rocheleau.....	Aug. 8, 1912..	120 00
Madeleine, Cap, village.....	I. Grandment.....	Aug. 8, 1912..	120 00
Marcotte traverse.....	F. Marcotte.....	Oct. 18, 1910..	105 00
Moine, Ile du (front).....	N. Salvail.....	May 15, 1912..	140 00
Moine, Ile du (back).....	P. Salvail.....	May 29, 1912..	180 00
Molson island.....	Miss E. G. Molson.....		140 00
Nicolet (front).....	D. Heroux.....	Dec. 5, 1906..	320 00
Nicolet (back).....	E. Heroux.....	Dec. 5, 1906..	180 00
Oka.....	A. Lacroix.....	July 24, 1912..	120 00
Oka wharf.....	T. Hamelin.....	July 23, 1912..	80 00
Pads, Ile du, range.....	P. Dandonneault.....	July 19, 1912..	320 00
Papineauville range.....	J. Chabot.....	June 17, 1897..	180 00
Perrot, Ile, range.....	A. McNab.....	May 20, 1905..	180 00
Petite Ile course range.....	J. Pare.....	Aug. 7, 1912..	100 00
Petite traverse (front).....	E. Lavigne.....	April 22, 1912..	120 00
Petite traverse (back).....	H. Jussaume.....	April 22, 1912..	140 00
Platon range.....	C. Beaudet.....	Aug. 24, 1904..	220 00
Portneuf range.....	E. Paradis.....	April 10, 1912..	320 00
Raisin, Ile au.....	L. Verville.....	May 13, 1912..	320 00
Repentigny (front).....	A. Payette.....	Feb. 4, 1913..	120 00
Repentigny (back).....	L. L. Rivet.....	April 28, 1894..	140 00
Richelieu.....	J. Auger.....	July 14, 1908..	220 00
Rigaud.....	O. Mallette.....	April 7, 1910..	200 00
Ronde, Ile, range.....	H. Charland.....	Aug. 1, 1907..	500 00
Ste. Anne lock.....	F. X. Demers.....	May 17, 1907..	150 09
Ste. Anne de Sorel (front).....	M. Razotte.....	May 10, 1912..	120 00
Ste. Anne de Sorel (back).....	M. Latraverse.....	May 10, 1912..	140 00
St. Charles point.....	A. Messier.....	Sept. 30, 1910..	105 00
Ste. Emmelie (front).....	J. B. Gaudet.....	Jan. 9, 1911..	125 00
Ste. Emmelie (back).....	E. Filtreau.....	Mar. 16, 1905..	140 00
St. Francis range.....	F. Proulx.....	July 5, 1912..	320 00
St. Francis river range.....	P. Descheneau.....	Mar. 21, 1912..	220 00
St. Jean.....	E. Menard.....	Feb. 15, 1909..	220 00
St. Mark point.....	V. Ducharme, Jr.....	April 23, 1912..	100 00
St. Onge traverse.....	A. Larivière.....	Nov. 22, 1910..	105 00
St. Ours traverse, ile (front).....	G. Fortin.....	May 13, 1912..	180 00
St. Ours traverse, ile (back).....	A. Gaudette.....	Oct. 24, 1908..	180 00
St. Ours Locks traverse.....	D. Lamoure.....	June 19, 1912..	100 00
St. Peter, Lake (front).....	G. A. Lamirande.....	May 22, 1911..	335 00
St. Peter, Lake (back, down range).....	J. Lefevre.....	May 11, 1911..	335 00
St. Peter, Lake (back, up range).....	D. Lafleche.....	May 11, 1911..	380 00
St. Placide.....	H. Dubreuil.....	July 19, 1912..	220 00
Ste. Thérèse, upper range.....	S. Reeves.....	Oct. 12, 1870..	380 00
Ste. Thérèse, lower range.....	J. Malo.....	Feb. 1, 1897..	220 00
St. Valentine range.....	A. Martin.....	June 30, 1909..	210 00
Sorel range.....	Richelieu & Ontario Navigation Co.....	Sept. 6, 1854..	85 00
Tetraultville.....	A. David.....	Nov. 18, 1911..	190 00
Three Rivers range.....	H. Roy.....	July 28, 1911..	190 00
Varennnes.....	W. Hebert.....	April 17, 1912..	100 00
Vercheres traverse (front).....	E. Dansereau.....	April 13, 1912..	120 00
Vercheres traverse (back).....	P. Charbonneau.....	April 21, 1902..	120 00
Vercheres village (front).....	J. Guyon.....	April 21, 1902..	140 00
Vercheres village (back).....	E. Chagnon.....	April 12, 1912..	100 00
Wadleigh point.....	J. A. Patterson.....	June 1, 1891..	100 00
Way channel and besserer crossing.....	M. Beauchamp.....	Nov. 20, 1906..	240 00
Way shoal traverse.....	M. V. Proulx.....	Oct. 10, 1912..	120 00
Windmill Point traverse.....	O. Phaneuf.....	April 23, 1912..	100 00
Witch shoal.....	D. E. Peters.....	June 1, 1891..	260 00

* \$25 for operasing fog horn or bell.

SESSIONAL PAPER No. 21

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion. —
Continued.

ONTARIO.

Names of Station.	Name of Lightkeeper.	Appointed.	Salary.	
			\$	cts.
Allumette island.....	J. Cox.....	June 12, 1887..	180	00
Allumette lake.....	J. T. Manders.....	Sept. 17, 1907..	180	00
Arnprior island.	W. Kilroy.....	Sept. 27, 1905..	260	00
* Arthur, port.....	J. C. Banks.....	Dec. 11, 1908..	380	00
Aylmer island.....	F. Boucher.....	Nov. 17, 1882..	260	00
Badgeley island.....	O. Proulx.....	Feb. 3, 1912..	380	00
Barriefield Common.....	W. Murray.....	May 17, 1900..	200	00
Baril, Point au.....	O. Hanson.....	July 10, 1907..	440	00
Baskins wharf.....	S. Sullivan.....	Dec. 22, 1896..	220	00
* Battle island.....	C. S. McKay.....	Aug. 27, 1877..	680	00
Baymouth, South.....	J. A. Ritchie.....	Sept. 10, 1903..	220	00
Belleville.....	H. J. Smith.....	April 27, 1912..	260	00
Bishops bay.....	I. Lakins.....	May 24, 1912..	240	00
Blind river.....	W. H. McGauley.....	Jan. 5, 1909..	60	00
Blind river, Eddy wharf.....	Eddy Bros.....	Oct. 27, 1905..	60	00
Bois Blanc.....	C. R. Hackett.....	April 27, 1910..	560	00
Boyd island.....	Mrs. Eliz. Martin.....	Jan. 6, 1905..	380	00
Brebeuf range.....	W. J. Baxter.....	Nov. 23, 1885..	440	00
Brighton.....	H. V. Simpson.....	May 11, 1888..	540	00
* Bronte.....	C. Osborne.....	Dec. 7, 1906..	260	00
Bruce Mines.....	W. Fleming.....	Mar. 31, 1909..	95	00
Buckom point.....	A. Ouellette.....	Feb. 22, 1913..	220	00
Burlington bay.....	T. Lundy.....	May 2, 1905..	780	00
Burnt island.....	J. A. Acton.....	May 24, 1912..	380	00
* Burwell, Port.....	J. Sutherland.....	June 18, 1894..	520	00
Burwell Port, inner range.....	J. Sutherland.....	Oct. 27, 1909..	95	00
* Byng Inlet.....	L. Lamondin.....	July 30, 1901..	520	00
Cabot Head.....	L. Martindale.....	June 15, 1912..	980	00
Campbell Island.....	R. Wilson.....	July 6, 1905..	260	00
Caribou Island.....	J. W. Johnston.....	May 3, 1912..	1,200	00
Cecebe Lake.....	R. Nicholson.....	Feb. 12, 1912..	260	00
Centre Bro. island.....	D. Wemp.....	Jan. 9, 1901..	320	00
Chantry island.....	M. McIver.....	Feb. 16, 1907..	680	00
Chenal Ecarte.....	P. Willis.....	Dec. 3, 1908..	170	00
Cherry island.....	I. S. Johnson.....	Nov. 5, 1883..	380	00
* Christian island.....	A. Collins.....	Mar. 25, 1891..	600	00
* Clapperton island.....	H. F. Baker.....	Dec. 2, 1895..	440	00
Clark, point.....	M. McDonald.....	Jan. 8, 1897..	600	00
Cobourg.....	R. Gordon.....	Apr. 7, 1911..	50	00
Cobourg fog alarm engineer.....	J. Lavis.....	Aug. 1, 1910..	400	00
Colborne, Port.....	H. Clark, Jr.....	May 30, 1904..	1,180	00
Colborne, Port, East.....	J. Madden.....	May 22, 1911..	335	00
* Colchester reef.....	F. Malott.....	Mar. 31, 1911..	905	00
Cole shoal.....	R. P. Boyd.....	Apr. 9, 1884..	380	00
* Collingwood.....	J. Wilde.....	Feb. 24, 1912..	440	00
Coppermine point.....	F. E. Roussain.....	Oct. 10, 1910..	200	00
* Corbeil point.....	J. Davieux.....	May 27, 1890..	440	00
Corunna.....	W. J. Scott.....	Apr. 23, 1901..	220	00
Coteau Landing.....	W. H. E. Filiatreault.....	Apr. 10, 1912..	180	00
Coulonge, lake.....	E. Bertrand.....	July 16, 1908..	180	00
Cove island.....	W. J. Simpson.....	July 5, 1912..	980	00
Credit, Port.....	J. Miller.....	Dec. 16, 1897..	260	00
Croker, cape.....	W. Chapman.....	Apr. 27, 1910..	1,080	00
Current, Little.....	D. Boyter.....	Apr. 22, 1902..	440	00
Dalhousie, Port.....	G. Houston.....	May 3, 1912..	440	00
Darlington.....	Port Darlington Co.....	.....1886..	100	00
Deep river islet.....	J. Beauchamp.....	Mar. 3, 1908..	180	00
Deseronto.....	Rathbun Lumber Co.....	Oct. 14, 1884..	200	00
Dover, Port.....	S. L. Butler.....	July 15, 1897..	440	00
Duck island, Great.....	N. R. Smith.....	Nov. 25, 1912..	980	00

* \$25 for operating fog horn or bell.

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

ONTARIO *Continued.*

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Edward, point	L. Knauff	May 23, 1908..	260 00
Elgin, Port	R. M. Lowry	Mar. 14, 1896..	180 00
False Ducks	J. W. Hudgin	May 3, 1912..	880 00
Ferris island	J. Morriveau	Mar. 24, 1898..	320 00
Flowerpot island	W. J. Spears	June 15, 1912..	880 00
Fort William, Ottawa river	C. L. McCool	May 17, 1911..	110 00
Fox Island	L. Presser	Apr. 18, 1910..	290 00
Frenchman bay	W. O'Brien	Apr. 14, 1904..	220 00
*French river, and Bustard rocks	Mrs. E. B. Borron	Jan. 30, 1903..	680 00
*Gananoque narrows	Mrs. M. Cross	Jan. 2, 1908..	440 00
Jackstraw shoal			
Gargantua	C. Miron	Apr. 27, 1912..	520 00
Giants Tomb	A. H. Griffith	Sept. 17, 1898..	380 00
Gibraltar point	B. Matthews	Sept. 28, 1912..	380 00
Gimli	K. Samundsson	Apr. 19, 1912..	80 00
Goderich	W. Robinson	Apr. 12, 1911..	540 00
Goderich beacon	W. Robinson	Apr. 12, 1911..	50 00
*Gore bay	A. Matheson	July 10, 1903..	440 00
Gravenhurst narrows	I. Barnes	Mar. 20, 1906..	180 00
Grenadier island	D. Root	Nov. 30, 1908..	320 00
*Griffith island	W. S. Boyd	May 14, 1889..	600 00
Hamilton island and Glengarry point	R. Casgrain	Apr. 6, 1906..	380 00
Hope island	T. Marchildon (lightkeeper)	Feb. 24, 1912..	555 00
	H. Chester (engineer)	Sept. 19, 1912..	625 00
Hog island	A. Greenwood	Apr. 25, 1912..	120 00
Jackfish bay	B. Almos	Oct. 1, 1907..	100 00
Kagawong	W. M. Boyd	Apr. 13, 1893..	120 00
Kaministiquia	J. Armstrong	Apr. 28, 1894..	380 00
*Killarney, E. and W.	J. Burke	July 5, 1912..	380 00
Kincardine	T. McGaw, Jr.	June 13, 1899..	600 00
Kingsville	W. H. Black	July 27, 1902..	260 00
*Knapp point	W. W. Card	Apr. 10, 1912..	220 00
Knight point	W. Shannon	Sept. 27, 1866..	600 00
*Lamb island	A. Alexander	Apr. 26, 1897..	680 00
*Lancaster pier and bar	J. J. Munroe	June 8, 1892..	520 00
Leamington	F. H. C. Conover	Apr. 24, 1883..	260 00
Lime, kiln crossing	S. Pettypiece	May 11, 1888..	350 00
Lindoc island	J. G. Wallace	May 24, 1912..	380 00
Lion's head	P. W. Brady	Sept. 14, 1912..	80 00
*Lonely island	J. Haitse	May 11, 1885..	880 00
Long point, E. E.	S. B. Cooke	June 9, 1897..	1,180 00
Long point, W. E.	F. E. Mason	June 3, 1901..	600 00
Lower narrows	J. B. LeBlanc	Jan. 4, 1904..	180 00
Lyal island	J. McKay	Oct. 27, 1884..	680 00
McKay island	J. Harvey	July 10, 1907..	380 00
McKie point	D. Daoust	Sept. 21, 1893..	260 00
McQuestion point	Mrs. E. McLeod	Feb. 22, 1904..	180 00
*Maitland, Port	Mrs. J. Grant	June 19, 1907..	440 00
Manitowaning	J. J. Morrow	May 3, 1912..	180 00
*Meaford	S. Dutcher	May 7, 1877..	260 00
*Michipicoten harbour	W. T. Richardson	Sept. 27, 1900..	380 00
*Michipicoten and Agathe island	C. Davieux	June 29, 1910..	560 00
Michipicoten island, E. E.	Wm. Sherlock	Feb. 5, 1912..	600 00
Middle island	J. Lidwell	May 16, 1911..	460 00
Midland point	T. Williams	July 19, 1912..	260 00
Mississagi island	L. D. McDonald	May 16, 1896..	660 00
Mississagi strait	J. H. Ball	May 7, 1900..	1,180 00
Mitchell bay	S. MacDonald	Feb. 22, 1912..	140 00
Mohawk island	R. O. Smithers	Mar. 3, 1896..	600 00
Morris island	A. Coburn	Apr. 10, 1912..	180 00

* \$25 for operating fog horn or bell.

SESSIONAL PAPER No. 21

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
*Continued.*ONTARIO—*Continued.*

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.	
			\$	cts.
*Narrow island.....	A. B. Boyter.....	Jan. 3, 1898..	380	00
Niagara.....	R. J. Allen (lightkeeper) ..	July 19, 1907..	260	00
	J. W. McMillan (engineer)..	Nov. 30, 1910 ..	560	00
Nigger island.....	C. Jeffrey.....	Apr. 28, 1894..	320	00
Ninemile point.....	S. Veech.....	Mar. 7, 1894..	980	00
*Nottawasaga island.....	J. McNabb.....	Feb. 24, 1912..	600	00
Oakville.. ..	M. Felan.....	Apr. 28, 1894..	260	00
Onderdonk point.....	W. Allison.....	Apr. 25, 1912..	140	00
*Otter island.....	R. McMenemy.....	Nov. 17, 1903..	600	00
Owen Sound.....	A. McLean.....	Dec. 23, 1897..	320	00
Parisian island.....	J. Douglas (temporary).....		980	00
	S. Bottom.....	Nov. 12, 1910..	680	00
Pelee passage.....	J. Ouellette (1st assistant)...	Oct. 6, 1911..	485	00
	G. Simpson (2nd assistant)...	July 5, 1912..	310	00
Penetanguishene and Whisky island.....	C. Columbus.....	Mar. 18, 1893..	440	00
*Peninsula harbour.....	J. Blondin.....	Oct. 14, 1910..	640	00
Peter point.....	T. A. Farrington.....	Jan. 25, 1913..	880	00
Peter rock.....	J. Roddick.....	Sept. 7, 1907..	680	00
*Pie island.....	J. Vernon.....	Mar. 9, 1912..	320	00
*Pigeon island.....	J. H. Davis.....	May 16, 1896..	640	00
Pins, Point aux.....	A. McKinnon.....	May 16, 1904..	520	00
Pleasant, point.....	Mrs. M. Gordon (temporary).....		380	00
Porphyry, point.....	J. Bosquet.....	Aug. 11, 1908..	1,030	00
Portsmouth range.....	E. Graham.....	Apr. 27, 1912..	220	00
	F. T. Cornwall (lightkeeper).....	May 24, 1912..	380	00
Presqu'Isle.....	W. B. Ainsworth (engineer).....	Oct. 12, 1907..	600	00
	T. E. Ellis.....	June 15, 1912..	320	00
*Providence bay.....	W. W. Rains.....	Aug. —, 1892..	140	00
Rains wharf.....	P. O'Connor.....	July 27, 1904..	380	00
Rainy river.....	W. Hughes.....	Feb. 12, 1892..	520	00
Red river.....				
Red Horse rock.....	A. Meggos.....	May 24, 1912..	380	00
Spectacle shoal.....				
*Red rock and Snug harbour.....	A. Brown.....	June 2, 1909..	660	00
Richards landing.....	J. Burnside.....	Apr. 3, 1912..	80	00
Robert, cape.....	N. Matheson.....	Oct. 7, 1896..	440	00
*Rondeau.....	W. R. Fellows.....	Dec. 18, 1888 ..	520	00
Rosseau.....	J. G. Dixon.....	July 21, 1890..	180	00
Sailors Encampment.....	A. M. Rains.....	Aug. —, 1892..	180	00
*St. Anicet.....	D. McKillop.....	June 8, 1892..	380	00
Sand point.....	P. McLean.....	May 1, 1909..	95	00
Saugeen.....	A. McAulay.....	Aug. 30, 1909..	210	00
*Scotch Bonnet.....	B. Y. Cunningham.....	May 9, 1912..	440	00
*Shaganash.....	W. Fairall.....	May 24, 1912..	320	00
Sheguiandah.....	J. Heis.....	Apr. 12, 1912..	140	00
*Shoal island.....	J. L. McCluskie.....	Sept. 11, 1909..	360	00
Silver islet.....	J. Cross.....	May 18, 1905..	180	00
*Sister rock, west.....	J. Thibault.....	Dec. 6, 1905..	520	00
Slate islands.....	A. B. Sutherland.....	July 21, 1908..	680	00
*Snake island.....	C. V. Sudds.....	Mar. 16, 1912..	260	00
Southampton.....	J. Brown.....	June 29, 1904..	260	00
South bay point.....	W. Hudgins.....	June 15, 1912..	260	00
South East bay.....	T. Darling.....	Jan. 31, 1891..	140	00
South river.....	F. Baechler.....	July 2, 1903..	180	00
Squaw island.....	W. H. Boucha (temporary).....		260	00
Stag island.....	T. M. Cowan.....	Nov. 3, 1903..	260	00
Stanley, Port.....	J. L. Oliver.....	Jan. 8, 1908..	440	00
Stanley, Port, beacon..	J. L. Oliver.....	Aug. 6, 1909..	50	00
Stokes bay.....	A. Smith.....	May 14, 1908..	320	00
*Strawberry island.....	W. McKenzie.....	May 4, 1893..	440	00
Stribling point.....	J. Hicks.....	Apr. 10, 1912..	260	00

* \$25 for operating fog horn or bell.

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

ONTARIO—Concluded.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.	
			\$	cts.
Sulphur island.....	W. Birch.....	Aug. 1, 1910..	410	00
Supple point.....	C. J. Kelly.....	Oct. 6, 1909..	170	00
Telegraph island.....	M. Benn.....	Dec. 10, 1912..	260	00
Thames island.....	H. J. Cartier.....	Oct. 19, 1884..	520	00
*Thessalon.....	J. Harvey.....	Nov. 23, 1897..	440	00
Thornbury.....	R. Lowe.....	Apr. 12, 1887..	140	00
Thunder cape.....	W. Craig.....	May 17, 1892..	1,180	00
*Tobermory.....	J. H. Smith.....	Apr. 10, 1912..	260	00
Tomahawk island.....	T. Sweeney.....	Sept. 19, 1902..	320	00
Toronto, east pier.....	G. McKelvie.....	Aug. 1, 1907..	1,180	00
*Toronto, west entrance.....	F. Ward.....	Sept. 28, 1912..	220	00
Trenton.....	J. A. McHenry.....	June 5, 1912..	180	00
Victoria harbour.....	R. Belcher.....	Aug. 5, 1912..	180	00
*Victoria island.....	G. Cosgrave.....	Nov. 14, 1889..	520	00
Wabi river.....	D. McKelvie.....	Apr. 10, 1912..	260	00
Warren Landing.....	H. McDonald.....	Sept. 14, 1907..	400	00
Welcome islands.....	A. Perras.....	May 10, 1896..	980	00
Western islands.....	H. Hewitt.....	Apr. 27, 1912..	1,080	00
Whitby.....	R. Goldring.....	Dec. 2, 1911..	190	00
Wiarion.....	W. Gilbert.....	Sept. 13, 1907..	100	00
Wicked point.....	A. Clark.....	May 13, 1912..	380	00
*Wilson channel.....	R. Bamford.....	Jan. 15, 1912..	380	00
Wolfe island.....	W. Gillespie.....	Mar. 16, 1885..	380	00

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*Black Bear island.....	J. Matheson.....	June 22, 1899..	380	00
*Cox Reef.....	A. A. T. McKay.....	Mar. 31, 1911..	500	00
*George island.....	E. Arrason.....	Aug. 26, 1912..	440	00
Gimli.....	K. Samundsson.....	April 9, 1912..	80	00
*Gull harbour.....	T. Fjeldsted.....	May 6, 1904..	180	00
Red river range.....	Wm. Hughes.....	Feb. 12, 1892..	520	00
Warren Landing ranges.....	H. McDonald.....	Sept. 14, 1907..	400	00

BRITISH COLUMBIA.

Active pass.....	H. Georgeson.....	July 21, 1884..	1,470	00
Alberni.....	H. Miller.....	Dec. 16, 1911..	180	00
Amphitrite point.....	G. W. Grant.....	Feb. 28, 1907..	390	00
Atkinson point.....	T. D. Grafton.....	Apr. 9, 1910..	1,395	00
Bellenas islands.....	A. B. Gurney.....	Dec. 10, 1912..	1,170	00
Bare point.....	J. C. Chalmers.....	Aug. 5, 1912..	270	00
Beale, cape.....	J. S. Richardson.....	Oct. 6, 1911..	1,545	00
*Berens island.....	W. H. Harrison.....	Oct. 29, 1912..	200	00
Bernie island.....	G. Rudge.....	June 30, 1906..	390	00
*Brocton point.....	W. D. Jones.....	Aug. 20, 1890..	570	00
Carmanah.....	G. Woodly.....	July 4, 1912..	1,470	00
Crofton.....	H. Carter.....	Jan. 10, 1913..	210	00
Denman island.....	H. Piercy.....	May 16, 1911..	502	50
Discovery island.....	M. A. Croft.....	Apr. 1, 1902..	1,470	00
*Dryad point.....	C. Carpenter.....	Dec. 4, 1899..	480	00
Egg island.....	J. Forsyth.....	Sept. 26, 1910..	1,695	00
Entrance island.....	A. L. W. Paul.....	Feb. 4, 1913..	1,320	00
Estevan point.....	J. P. Jensen.....	May 27, 1910..	1,925	00

* \$25 for operating fog horn or bell.

SESSIONAL PAPER No. 21

STATEMENT of lightstations and names of lightkeepers, etc., in the Dominion.—
Continued.

BRITISH COLUMBIA—Concluded.

Name of Station.	Name of Lightkeeper.	Appointed.	Salary.
			\$ cts.
Fiddle reef.	D. H. McNeill.....	Mar. 21, 1905..	570 00
First narrows	A. Rood.....	Aug. 1, 1911..	400 00
Fisgard..	J. Gosse.....	Oct. 13, 1909..	547 50
Fraser river, North arm range.....	D. W. McCready (temporary)		
Fraser river and Garry point.....	A. A. Parker.....	Oct. 14, 1907..	570 00
Fraser river lightship.....	M. O'Brien.....	Sept. 26, 1906..	1,470 00
Gallows point for bell.....	Western Fuel Co..	June 8, 1906..	120 00
Green island.	A. Dingwell.....	Feb. 11, 1911..	1,357 50
Helen point fog bell	D. Tom	Mar. 2, 1910..	240 00
Holland rock.....	J. E. Gibson.....	Jan. 25, 1913..	1,320 00
Ivory island	F. Reuter	May 2, 1905..	1,170 00
Kaslo	Kootenay Electric Co.		240 00
Kootenay Landing.....	Canadian Pacific Ry. Co. . .	Apr. 10, 1909..	120 00
Lardo.....	Canadian Pacific Ry. Co. . .	Mar. 19, 1910..	120 00
Lawyer islands.....	F. W. B. Elsterman.....	Oct. 26, 1905..	780 00
Lennard island.....	R. Pollock.....	July 21, 1908..	2,000 00
Lookout island.....	A. Ellis	Dec. 1, 1906..	390 00
*Lucy island.....	J. S. O. Ouellette.....	July 6, 1910..	720 00
Merry island.	M. T. Franklin.	Jan. 8, 1904..	570 00
McLoughlin point	W. P. Daykin.....	July 4, 1912..	1,470 00
Mudge, cape.	J. Davidson	June 27, 1898..	570 00
Nanaimo harbour....	H. B. Shaw	June 4, 1907..	330 00
Nootka.....	H. T. W. Smith	Feb. 11, 1911..	502 50
Pachena.....	W. R. Pillar.....	Nov. 6, 1908..	2,000 00
Patey rock.....	H. Moore	Jan. 27, 1911..	240 00
Pilot bay.....	E. Montreuil.....	Dec. 10, 1907..	570 00
Pine island.....	D. B. McPhee.....	Jan. 7, 1913..	1,470 00
*Pointer island.	J. Codville.....	Oct. 24, 1900..	570 00
*Porlier pass range. . .	F. F. Allison.....	Apr. 14, 1903..	660 00
*Portlock point.....	G. A. Watson	Apr. 12, 1911..	502 50
Proctor.....	J. W. Gallup.	Apr. 20, 1900..	600 00
*Prospect point.....	J. Grove.	July 7, 1898..	570 00
*Pulteney point.....	A. McKela.	Mar. 14, 1906..	570 00
Quatsino.	N. C. Nelson.....	Dec. 6, 1910..	547 50
Race rocks.....	F. M. Eastwood	Jan. 31, 1891..	1,770 00
Saturna island.....	J. Georgeson.....	Oct. 26, 1889..	900 00
*Scarlett point.....	W. Hunt.....	Sept. 24, 1908..	570 00
Sherringham point.....	E. T. Arden.....	Aug. 30, 1912..	1,320 00
Sisters.	T. C. L. Hayllar.....	Dec. 10, 1912..	1,020 00
Swale rock.....	A. Gosney.....		210 00
Trial islands..	H. S. O'Kell.....	Oct. 24, 1906..	1,170 00
Triangle island.	J. W. Davis.....	Oct. 4, 1912..	1,395 00
Whiffen spit.....	A. W. Donaldson.....	May 3, 1912..	180 00
Victoria harbour beacons.....	T. Sparks	Jan. 1, 1903..	390 00
Yellow island.....	J. Doney.. . . .	Feb. 6, 1906..	1,170 00

* \$25 for operating fog horn or bell.

(ENCLOSURE No. 3.)

STATEMENT showing complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13.

UNDER THE NOVA SCOTIA AGENCY—DISTRICT No. 1.

Station No.	Name of Station.	Description of Buoy.
24	Pubnico	Gas and whistling.
27	Cape Sable, Southwest ledge.....	" "
29	Brazil rock.....	" "
32	Sheburne.....	" "
35	Lockeport	" "
37	Little Hope.....	" "
39	Liverpool	" "
40	Liverpool fairway.....	Gas and bell.
45	Lahave.....	" "
48	Lunenburg	Gas and whistling.
49	Lunenburg, east point ledge.....	Gas and bell.
54	Northeast shoal.....	Gas and whistling.
60	Sambro.	" "
61	Outer Automatic, Halifax harbour.....	" "
62	Inner Automatic, Halifax harbour.....	" "
63	Neverfail, Halifax harbour.....	Gas
65	Thrumcap.....	Gas and bell.
67	Middle Ground, Halifax harbour.....	Gas
68	Leopard shoal.....	"
70	Egg island.....	Gas and whistling.
72	Sheet harbour.....	" "
76	Liscomb.....	" "
80	Isaac harbour.....	" "
84	Whitehead	" "
86	Canso, or Grime shoal	" "
90	Cerberus rock.....	" "
94	Petitedegrat.....	Gas and bell.
100	Guion island.....	Gas and whistling.
102	Louisburg	" "
103	Flat point	" "
112	North West bar, Sydney.....	Gas
117	Seal reefs	"
130	Skinner reef.....	"

UNDER THE NEW BRUNSWICK AGENCY—DISTRICT No. 2.

4 S.	Blonde rock	Gas and whistling.
6-S.	Southwest fairway, Yarmouth.....	" "
8-S.	Cape Fouché	" "
10-S.	Hen-and-chickens, Yarmouth	Gas and bell.
12-S.	Southwest ledge, Brier island.....	Gas and whistling.
14-S.	Northwest ledge, Brier island.....	" "
16-S.	Avon river	Gas
3	Old Proprietor.....	Gas and whistling.
5	North Wolves	" "
7	Lepreau.....	" "
9	Black point.....	" "
18	Foul ground, St. John harbour	Gas
20	Quaco ledge	Gas and whistling.
28	Maquacha spit, Restigouche river.....	Gas
31	Scaumenac, Restigouche river.....	"
32	Point Lanin, Restigouche river.....	"
34	Garde pointe, Restigouche river	"
36	Oak point, Restigouche river	"
38	Traverse, Restigouche river.....	"
40	Busteed, Restigouche river	"

SESSIONAL PAPER No. 21

STATEMENT showing complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13.—*Continued.*

UNDER THE NEW BRUNSWICK AGENCY—DISTRICT No. 2—*Concluded.*

Station No.	Name of Station.	Description of Buoy.
42	Horseshoe bar, east, Miramichi.....	Gas.
44	Horseshoe bar, west, Miramichi river.....	"
46	Caraquet harbour, east.....	"
47	Caraquet harbour, west.....	"

UNDER THE PRINCE EDWARD ISLAND AGENCY—DISTRICT No. 3.

1	Indian Rocks.....	Gas and whistling.
2	Point Prim.....	"
3	Fitzroy rock.....	"
4	West point.....	"
5	Miscouche shoal.....	"
6	Zephyr rock, Shediac bay, N.B.....	Gas.

UNDER THE QUEBEC AGENCY—DISTRICT No. 4.

21-B.	Matane.....	Gas and bell.
25-B.	Cock point.....	Gas.
27-B.	Father point.....	"
29-B.	Rimouski road.....	"
33-B.	Barrett ledge.....	Gas and bell.
51-B.	Pilgrim shoal.....	"
56-B.	Traverse, middle ground.....	Gas.
58-B.	South Traverse middle ground.....	"
59-B.	Lower Traverse.....	"
60-B.	Upper Traverse.....	"
62-B.	Channel patch, N.E.	"
64-B.	Channel patch.....	Gas and bell.
65-B.	Port Joli.....	Gas.
66-B.	Goose island reef.....	"
67-B.	Beaujeau bank, northeast extremity.....	Gas and bell.
69-B.	Beaujeau, west end.....	"
70-B.	Beaujeau bank, west end.....	"
71-B.	St. Thomas channel.....	"
72-B.	" ".....	"
73-B.	" ".....	"
73½-B.	" ".....	"
74-B.	" ".....	"
75-B.	" ".....	"
76-B.	" ".....	"
77-B.	" ".....	Gas.
78½-B.	" ".....	"
78½-B.	" ".....	"
79-B.	Wye rock.....	"
80-B.	Grosse isle.....	"
84-B.	Empress shoal.....	"
86-B.	Madame island reef.....	"
87-B.	Beaumont reef.....	"
89-B.	Point Lévis.....	"
96-B.	Lark reef, south end.....	"
102-B.	Morin shoal.....	"
106-B.	Grande Pointe.....	"
108-B.	Longue Pointe.....	"
110-B.	Eastern Narrows, north traverse.....	"
138-B.	Beauport flats.....	"
14-Q.	Fly bank.....	"
15-Q.	Point Nicholas.....	"

4 GEORGE V., A. 1914

STATEMENT showing complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13.—*Continued.*

UNDER THE QUEBEC AGENCY—DISTRICT No. 4—*Concluded.*

Station No.	Name of Station.	Description of Buoy.
24-Q.	Pointe aux Trembles.....	Gas.
28-Q.	Pointe St. Antoine....	"
34-Q.	Ste. Croix.....	"
36-Q.	Ste. Croix bar....	"
44-Q.	Cap Santé.....	"
49-Q.	Pointe Platon.....	"

MONTREAL DIVISION—DISTRICT No. 5.

52-Q.	Portneuf.....	Gas.
68-Q.	Batture Simon.....	"
73-Q.	Batture du Chêne.....	"
75-Q.	Batture à Cadieux.....	"
78-Q.	Cape Charles.....	"
90-Q.	Cap à la Roche curve.....	"
92-Q.	Cap à la Roche.....	"
97-Q.	Upper Cap à la Roche.....	"
105-Q.	Cap Levrard.....	"
110-Q.	Cap Levrard.....	"
115-Q.	Batiscan course.....	"
117-Q.	Batture St. Pierre.....	"
119-Q.	Batture St. Pierre.....	"
123-Q.	Batiscan anchorage.....	"
129-Q.	Batture Perron.....	"
2-C.	Pointe Citrouille.....	"
15-C.	Poulier Carpentier.....	"
20-C.	Ile Bigot.....	"
23-C.	Becancour, lower traverse.....	"
30-C.	Becancour bend.....	"
39-C.	Becancour, upper traverse.....	"
43-C.	Cap Madeleine.....	"
55-C.	Ile aux Cochons.....	"
59-C.	Three Rivers shoal.....	"
4-L.	Poulier Laforce.....	"
9-L.	English Bank.....	"
13-L.	Curve No. 3.....	"
17-L.	" 3.....	"
21-L.	" 3.....	"
22-L.	" 3.....	"
25-L.	" 3.....	"
35-L.	Pointe du Lac course.....	"
47-L.	".....	"
57-L.	Yamachiche bend.....	"
58-L.	".....	"
67-L.	Curve No. 2 to White Buoy.....	"
70-L.	" ".....	"
85-L.	" ".....	"
91-L.	Curve No. 1 to Curve No. 2.....	"
97-L.	" " 2.....	"
100-L.	" " 2.....	"
103-L.	" " 2.....	"
111-L.	Ile aux Raisins.....	"
123-L.	Pointe aux Soldats.....	"
136-L.	Ile de Grace.....	"
146-L.	Nepigon shoal.....	"
1-M.	Ile aux Foins.....	"
5-M.	St. Ours traverse.....	"
16-M.	Bellmouth curve.....	"
20-M.	".....	"
24-M.	".....	"
31-M.	Contrecoeur bend.....	"
45-M.	Contrecoeur junction.....	"

SESSIONAL PAPER No. 21

STATEMENT showing complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13.—*Continued.*

MONTREAL DIVISION—DISTRICT No. 5—*Continued.*

Station No.	Name of Station.	Description of Buoy.
82-M.	Plum Island.....	Gas.
89-M.	Verchères.....	"
103-M.	Poulier des Trois Bouées.....	"
117-M.	Cap St. Michel.....	"
124-M.	Ile des Lauriers.....	"
129-M.	Varennés curve.....	"
133-M.	".....	"
141-M.	".....	"
149-M.	Pointe aux Trembles bend.....	"
157-M.	Pointe aux Trembles curve.....	"
167-M.	".....	"
174-M.	Longue Pointe.....	"
177-M.	Poulier à Gagnon.....	"
181-M.	Longueuil.....	"
191-M.	".....	"
193-M.	".....	"
194-M.	Maisonneuve.....	"
195-M.	Ile Ronde.....	"
196-M.	Longueuil.....	"
201-M.	Montreal harbour.....	"

UNDER THE PRESCOTT AGENCY—DISTRICT No. 6.

16-S.	Four-fifth mile above Lachine.....	Gas.
38-S.	Lachine cut, upper entrance.....	"
48-S.	East of Lightship No. 2.....	"
53-S.	Off Browns point.....	"
76-S.	Between Light No. 2 and Light No. 3.....	"
86-S.	Between top light and ile Perrot.....	"
98-S.	Windmill point.....	"
100-S.	Entrance to Soulanges canal, east.....	"
102-S.	".....	"
104-S.	Soulanges canal, east.....	"
22-F.	Port Lewis.....	"
25-F.	Grosse pointe.....	"
30-F.	Soulanges canal, entrance.....	"
36-F.	Coteau landing.....	"
40-F.	Hay point.....	"
43-F.	West end of middle ground.....	"
46-F.	Port Lewis.....	"
48-F.	Point Mouille flats.....	"
64-F.	Lancaster.....	"
68-F.	Island bank.....	"
69-F.	East Lancaster bar.....	"
76-F.	Lancaster bar.....	"
78-F.	Squaw island.....	"
83-F.	Renshaw island.....	"
84-F.	Clarks islands.....	"
87-F.	Grass island.....	"
96-F.	St. Regis Dyke, west end.....	"
6-U.	Delaney shoal.....	"
8-U.	Archibald shoal.....	"
40-U.	Farran point.....	"
54-U.	Prunner shoal.....	"
72-U.	Jackass shoal.....	"
127-U.	Dixon island.....	"
128-U.	Upper entrance, Iroquois canal.....	"
2-T.	Brockville narrows.....	"
4-T.	Hillcrest.....	"
6-T.	Cole Shoal, middle ground.....	"
12-T.	Gananoque narrows.....	"
38-T.	Wolfe island.....	"

4 GEORGE V., A. 1914

STATEMENT showing complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13.—Continued.

UNDER THE PRESCOTT AGENCY—DISTRICT No. 6—Concluded.

Station No.	Name of Station.	Description of Buoy.
46-T.	Cold bath shoal.....	Gas.
61-T.	Penitentiary shoal.....	"
69-T.	West end of middle ground, between Snake island and Seven Acre shoal.....	"
102-T.	Northport shoal.....	"
106-T.	Minnie Blakeley shoal.....	"
110-T.	Trenton.....	"

ONTARIO DIVISION—LAKE ONTARIO—DISTRICT No. 7.

1	Niagara.....	Gas and bell.
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LAKE ERIE—DISTRICT No. 8.

6	Grub reef.....	Gas.
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DETROIT RIVER—DISTRICT No. 9.

13-D.	Bar point channel.....	Gas.
14-D.	".....	"
23-D.	".....	"
24-D.	".....	"
32-D.	".....	"
38-D.	Hackett reach.....	"
67-D.	Lime Kiln crossing.....	"
68-D.	".....	"
73-D.	".....	"
74-D.	".....	"
79-D.	Ballard reef channel.....	"
80-D.	".....	"
81-D.	".....	"
82-D.	".....	"
83-D.	".....	"
84-D.	".....	"
	Fighting island, south end.....	"

THAMES RIVER DISTRICT No. 11.

1	Thames river.....	Gas.
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ST. CLAIR RIVER—DISTRICT No. 12.

1	Courtright.....	Gas.
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SOUTHAMPTON—DISTRICT No. 15.

4	Chantry island, north.....	Gas.
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SESSIONAL PAPER No. 21

STATEMENT showing complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13—*Continued.*

GEORGIAN BAY—DISTRICT No. 16.

Section No.	Name of Section.	Description of Buoy.
	Cove island	Gas and whistling.
1-P.	Vails point	Gas and bell.
2-P.	Hooper island	Gas.
3-P.	Middle ground	"
4-P.	Three star shoal	"
5-P.	Seguin bank	Gas and whistling.
6-P.	Lone rock	"
7-P.	Lockerbie rock	Gas.
8-P.	Surprise shoal	Gas, whistling and bell.
10-P.	Kennedy bank	Gas.
	Lottie Wolf shoal	"
	Bennet bank	"
	Port McNicoll	"
1-B.	Maganatawan ledges	"
2-K.	Entrance, Key inlet	"
8-K.	Murray bend, Key inlet	"
14-K.	Keefer bend, Key inlet	"
20-K.	Digsby, Key inlet	"
24-K.	Mann reef, Key inlet	"
26-K.	Inside reef, Key inlet	"

STURGEON RIVER—DISTRICT No. 17.

1-N.	Sturgeon bar	Gas.
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SAULT STE. MARIE—DISTRICT No. 18.

1	Vidal shoal, north side, upper end	Gas.
2	Vidal shoal, south side, upper end	"
3	Vidal shoal, north side, lower end	"
4	Upper entrance, south side	"
5	Upper entrance, north side	"
	Outer Pancake shoal	Gas and bell.

PORT ARTHUR—DISTRICT No. 19.

1	Port Arthur	Gas.
2	Southeast dredged channel, Fort William	"
3	Northeast " "	"
4	Hare island reef	Gas and bell.

4 GEORGE V., A. 1914

STATEMENT showing complete list of stations at which gas buoys were in operation throughout the Dominion during the fiscal year 1912-13.—*Concluded.*

BRITISH COLUMBIA DIVISION—DISTRICT No. 24.

Station No.	Name of Station.	Description of Buoy.
1	Lookout island.....	Gas beacon.
2	Kyuquot.....	Gas and whistling.
19	San Juan.....	"
23	Lewis reef.....	Gas beacon.
24	Kelp reef.....	"
25	Dock island.....	"
26	Canoe rock.....	"
27	Helen point.....	"
28	Mary Ann point.....	"
29	Walker rock.....	"
30	Coffin islet.....	"
31	Danger reef.....	"
32	Joan point.....	"
33	Gabriola reef.....	"
35	Sand heads.....	Gas and whistling.
36	Grey point.....	Gas and bell.
37	First narrows, Vancouver harbour.....	Gas beacon.
40	Seechelt.....	"
42	Gallows point, Nanaimo harbour.....	"
43	West rocks.....	"
44	Goose spit.....	"
45	Kelp bar.....	Gas and bell.
47	Oyster bay.....	"
49	Lund.....	Gas beacon.
50	Cortez island.....	Gas and bell.
52	Gillard island.....	Gas beacon.
53	Maud island.....	"
54	Chatham point.....	"
56	Helmick island.....	"
57	Boat harbour.....	"
58	Haddington reef.....	Gas.
60	Crane island.....	"
64	Zero rock.....	Gas beacon.
67	Fog rocks.....	"
69	Camp island.....	"
70	Dall patch.....	Gas and whistling.
72	Vancouver rock.....	"
73	Jorkins point.....	Gas beacon.
74	Boat bluff.....	"
76	Separation point.....	"
84	Klewnuggit.....	"
85	Connis island.....	"
86	Watson rock.....	"
87	Herbert reef.....	"
88	Marked tree bluff, Kennedy island.....	"
89	Holland rock.....	"
92	Casey point.....	Gas.
93	Georgia rock.....	Gas and bell.
94	Spire ledge.....	Gas.
95	Barrett rock.....	Gas and bell.
96	Coast island.....	Gas beacon.
97	Ridley island.....	"
101	Alford rock.....	Gas.
103	Hodgson reef.....	Gas and whistling.
105	Pointers.....	Gas beacon.
107	Browning entrance.....	Gas and whistling.
110	Lawn point, Skidegate.....	"
111	Low island.....	Gas beacon.
112	Copper island.....	"
114	Koya point.....	"

SESSIONAL PAPER No. 21

(ENCLOSURE No. 4.)

STATEMENT showing new buoys and beacons established and withdrawn, also changes in present floating aids to navigation:—

NOVA SCOTIA.

Sydney harbour.—A gas buoy has been established to replace the conical buoy formerly maintained at Northwest bar.

A can buoy has been established to replace the gas buoy formerly maintained at Southeast bar.

Gut of Canso.—A whistling buoy has been established at the north entrance.

Green bay.—A bell buoy has been established to mark Green ledge.

St. Mary bay.—A bell buoy has been established off Metaghan.

Lennox passage.—A red spar buoy has been established to mark the turn into Louisdale.

Barrington bay.—A can buoy has been established 300 yards N. 45° E. magnetic from Congress shoal.

Coddle harbour.—6 spar buoys established as follows: Red at southeast end of Thrum cap reef; black at east end of Thrum cap reef; black at north end of Thrum cap reef; black at north side of Island shoal; red at southeast end of Race reef; red at south end of Mink reef.

Cornwall rock.—A conical buoy has been established to mark the rock.

Dover harbour.—A can buoy has been established to mark Black rock shoal.

Bayswater.—A can buoy has been established to mark the shoal extending out from east side of Aspotogan peninsula.

Clarke harbour.—A conical buoy has been established to mark the fairway between the lower and upper harbour.

Washabuck river.—A red spar buoy has been established off Campbell point.

Salamander point.—A red spar buoy has been established to mark the west side of the rock.

Port Felix.—A black spar buoy has been established to mark Sampson rock.

Cockold rock.—A black spar buoy has been established to mark southeasterly side of rock.

Eastern passage.—One can, one conical and seven spar buoys have been established to mark the channel.

Northwest ledge, Brier island.—The gas and whistling buoy has been moved to a new position about two-fifths of a mile N. 23° E. magnetic from Northwest rock.

New harbour.—The whistling buoy has been moved to a new position two miles southwesterly from its former position.

NEW BRUNSWICK.

Chance harbour.—A bell buoy has been established off the harbour.

Restigouche river.—The colour of Oak point gas buoy has been changed from red to black and the character of the light changed from an occulting white to a fixed white.

4 GEORGE V., A. 1914

The red spar buoy formerly maintained on the edge of Oak bay channel has been withdrawn.

A black spar buoy has been established on the south side of Garde point channel.

Chaleur bay.—The easterly gas buoy has been moved 200 feet southward of its old position.

St. Croix river.—A can buoy has been established off the east end of Dochet island.

St. Andrew harbour.—The can buoy formerly maintained on the end of Billy's bar has been replaced by a black spar buoy.

A red spar buoy is moored on the north side of the dredged channel, 500 feet N. 79° W. magnetic from St. Andrews lighthouse.

The black spar buoy formerly maintained at $1\frac{3}{4}$ cables N. 50° W. magnetic from St. Andrews lighthouse, and the black spar buoy formerly maintained at a position $3\frac{1}{2}$ cables N. 60° E. magnetic from Niger reef beacon have been withdrawn.

Two stakes, with bushes at their tops, have been placed as follows: One on the northern edge of the channel $2\frac{7}{8}$ cables N. 60° E. magnetic from Niger reef beacon and the other on the south edge of the channel $2\frac{3}{8}$ cables N. 63° E. magnetic from Niger reef beacon.

Musquash harbour.—A conical buoy has been established to mark the north bar.

Sister rock.—A can buoy has been established 100 yards S. $10^{\circ} 40'$ W. magnetic from Southeastern rock.

Cumberland basin.—A conical buoy has been established $1\frac{1}{2}$ miles westward of Amherst basin.

Passamaquoddy bay.—A conical buoy has been established about 100 feet outside of rock off Chamcook head.

A black spar buoy has been established at the entrance to Chamcook harbour.

A red spar buoy has been established at the entrance to Chamcook harbour.

A black spar buoy has been established at the narrows in Chamcook harbour.

A red spar buoy has been established at the narrows in Chamcook harbour.

PRINCE EDWARD ISLAND.

Miscouche.—The gas and whistling buoy has been moved to a new position $2\frac{1}{4}$ miles N. $42\frac{1}{4}^{\circ}$ W. magnetic from Sea Cow head.

Belle river.—A red spar buoy has been established 200 yards easterly from South breakwater.

A black spar buoy has been established 180 yards westerly from South breakwater.

Hillsborough bay.—A can buoy has been established on the Middle ground.

QUEBEC.

Gaspé basin.—A conical buoy formerly maintained at the south end of shoal on Arnold bluff and a can buoy at the north end of the spit off McConnell point have been withdrawn.

Little Natashkwan harbour.—A red and black spar buoy has been established to mark south end of Central reef.

Ottawa river.—A black spar buoy has been established 6,000 feet S. 33° W. magnetic from Pointe au Chêne church.

A black spar buoy has been established 3,400 feet S. 3° W. magnetic from Pointe au Chêne church.

A black spar buoy has been established 4,600 feet N. 65° W. magnetic from Pointe au Chêne church.

Cock point.—Gas buoy No. 25-B has been established.

SESSIONAL PAPER No. 21

Channel patch.—The character of the light exhibited from gas buoy No. 62-B has been changed from an occulting white to an occulting red.

The can buoy formerly maintained at 75-B has been withdrawn.

St. Thomas channel.—Eight gas buoys have been established, viz., 71-B, 72-B, 73-B, 73½-B, 74-B, 75-B, 76-B and 73¼-B.

Longue pointe.—The spar buoy No. 108-B has been replaced by a gas buoy.

Beauporte flats.—The conical buoy No. 138-B has been replaced by a gas buoy.

Batture St. Pierre.—The spar buoy No. 117-Q, has been replaced by a gas buoy.

The gas buoy No. 123-Q, has been moved 1,400 feet N. 30¾° E. magnetic from its former position.

The black spar buoy No. 125-Q, has been moved 500 feet N. 2¼° W. from its former position.

Saguenay river entrance.—A bell buoy has been established on the north side of Bar reef.

St. Thomas channel.—The characters of the lights exhibited from the gas buoys Nos. 72-B, 74-B, 76-B, 78¼-B, 78½-B and 84-B, have been changed from occulting white to occulting red.

Lake St. Peter.—The character of the light exhibited from gas buoy No. 22-L, has been changed from an occulting white to an occulting red.

Montreal ship channel.—The character of all the lights exhibited from all the red buoys between Montreal and Quebec have been changed from single to double flashing.

Harrington harbour.—The easterly can buoy has been moved to a new position 2,500 feet S. 76° E. magnetic from the southeast extremity of Hospital island.

The westerly conical buoy has been moved to a new position ¼ mile N. 61° 20' magnetic from the southeast extremity of Hospital island.

ONTARIO.

Thousand islands.—The gas buoy formerly maintained at Fiddlers Elbow has been withdrawn.

Niagara river.—A bell buoy has been established 5,200 feet N. 37° W. magnetic from Fort Niagara lighthouse.

The gas and bell buoy has been moved to a new position 2½ miles N. 9° W. magnetic from Fort Niagara lighthouse.

Rondeau.—A gas beacon has been established on the outer end of the breakwater extension to the west pier at the entrance to the harbour.

Detroit river.—The red spar buoy formerly maintained off the south end of Fighting island has been replaced by a gas buoy.

St. Clair river.—The gas buoy formerly maintained off point Edward has been withdrawn.

A black spar buoy has been established at the north end of Walpole island.

North Channel, Lake Huron.—A red and black spar buoy has been established to mark Rock shoal.

Lockerie rock, Georgian bay.—The gas buoy has been moved to a new position 1,200 feet N. 70° W. magnetic from the middle of the rock.

Port McNicoll.—A gas buoy has been established on the west side of the dredged channel.

A black spar buoy has been established 2,200 feet N. 24° W. magnetic from front range light on Bergie point.

A black spar buoy has been established 1,000 feet S. 33° W. magnetic from the last mentioned buoy.

4 GEORGE V., A. 1914

A black spar buoy has been established 2,500 feet S. 33° W. magnetic from the last mentioned buoy.

Byng inlet.—A black spar buoy has been established at the east end of the dredged cut east of Clark island.

A black spar buoy has been established on the north side of the channel, 650 feet above the black spar buoy opposite the west end of Rabbit island.

A black spar buoy has been established on the north side of the channel, opposite the east end of Rabbit island, 1,300 feet from the black spar buoy opposite the west end of Rabbit island.

A red spar buoy has been established on the south side of the channel, opposite the last mentioned buoy.

Outer Pancake shoal, Lake Superior.—The bell buoy formerly maintained at Outer Pancake shoal has been replaced by a gas and bell buoy.

South Bay, Lake Nipissing.—A black spar buoy has been established 3,950 feet N. $11\frac{1}{2}^{\circ}$ W. magnetic from South river light.

A black spar buoy has been established 650 feet N. $3\frac{1}{2}^{\circ}$ W. magnetic from South river light.

A black spar buoy has been established opposite South river light.

A black spar buoy has been established 2,300 feet S. $43\frac{1}{2}^{\circ}$ E. magnetic from South river light.

Blind river, Lake Huron.—A black barrel buoy has been established in the axis of the Eddy wharfs range lights.

A red spar buoy has been established on the east side of the entrance of the same dredged cut.

A black spar buoy has been established on the west side at the point where the channel leaves the Eddy range for the Government wharf.

A red spar buoy has been established on the east side of the same turn.

A red spar buoy has been established midway between the last described and the Government wharf.

Burke shoal, Thunder bay.—A red spar buoy has been established 5,400 feet N. 20° E. magnetic from the east end of Mutton island.

A red spar buoy has been established $\frac{1}{2}$ mile N. 58° E. magnetic from the east end of Mutton island.

A red spar buoy has been established at the east side of Burke shoal.

Fort William.—A bell has been established on the gas buoy maintained at the outer end of the dredged channel, on its southern edge.

MANITOBA.

Winnipeg River.—The following twenty spar buoys have been established, viz.:—

- (1.) A red and black spar at White Dog, south of Danger point.
- (2.) A red spar at Frank point east side of shoal.
- (3.) A red and black spar on south side of Manitou reef.
- (4.) A red and black spar on north side of Dowsett reef.
- (5.) A red spar on the east side of Bower reef.
- (6.) A red spar on the east side of Webster reef.
- (7.) A red spar on the east side of Wemys reef.
- (8.) A red spar on the east side of Holt point.
- (9.) A red and black spar on the west side of Tunnel bay reef.
- (10.) A red spar on the east side of Blakie reef.
- (11.) A red spar on the east side of Hill reef.
- (12.) A black spar on the west side of Robinson reef.
- (13.) A black spar on the west side of Laurencen point.

SESSIONAL PAPER No. 21

- (14) A black spar on the west side of Fiddler island.
- (15) A red spar on the north side of Gordon reef.
- (16) A black spar on the west side of Dufresne narrows.
- (17) A red and black spar on the south side of Villeneuve rapids shoal.
- (18) A black spar on the west side of Scott island reef.
- (19) A red and black spar on the north side of Palmerson reef.
- (20) A red spar on the north side of Magnuson point.

BRITISH COLUMBIA.

Boat harbour.—A gas beacon has been established.

Separation point.—A gas beacon has been established.

Herbert reef.—A gas beacon has been established.

Nanaimo.—A bell buoy has been established.

Tees rock (Uncharted).—A black spar buoy has been established.

Prevost passage.—A red and black spar buoy has been established to mark an uncharted rock struck by the ss. *Joan*.

Joan rock.—A can buoy has been established.

Vadso rock, Observatory inlet.—A conical buoy has been established.

Oregon rock.—A black spar buoy has been established.

Skidegate inlet.—A can buoy has been established to mark the western edge of shoal.

A can buoy has been replaced by a gas buoy.

Dall Patch.—The gas and whistling buoy has been moved 300 feet east from the uncharted rock north of the patch.

Barrett rock.—A bell has been established on the gas buoy.

Senanus island.—A gas beacon has been established at Saanich inlet.

First Vancouver narrows.—Gas beacon removed.

Templar channel.—The black spar buoy formerly maintained on the western edge of the shoal south of Felise island has been replaced by a can buoy.

The red spar buoy formerly maintained on the northern extremity of the south shoal ground in the middle of the channel has been replaced by a conical buoy.

Flat rock.—The gas beacon formerly maintained has been withdrawn.

Thompson river.—Eighteen spar buoys have been established, viz.:—

No. 2.—A red spar on the south side of the channel at Tranquille, at head of Kamloops lake.

No. 3.—A black spar on the north side of the channel at Tranquille.

No. 5.—A black spar on the north side of the channel at Tranquille, marking end of course.

No. 6.—A red spar on the south side of the channel at Tranquille.

No. 7.—A black spar on the north side of the channel at Tranquille.

No. 10.—A red spar on the south side of the channel above Tranquille.

No. 15.—A black spar on the north side of the channel at Campbell bar.

No. 17.—A black spar on the north side of the channel at Campbell bar, above No. 15.

No. 18.—A red spar on the south side of the channel at Campbell bar, above No. 17.

No. 20.—A red spar on the south side of the channel at Campbell bar, above No. 18.

No. 22.—A red spar on the south side of the channel at Campbell bar, above No. 20.

- No. 24.—A red spar on the south side of the channel at the Ducks.
No. 25.—A black spar on the north side of the channel at Ross bar.
No. 27.—A black spar on the north side of the channel at Graham bar.
No. 29.—A black spar on the west side of the channel at Shuswap.
No. 31.—A black spar on the west side of the channel at Shuswap, north of No. 29.
No. 32.—A red spar on the east side of the channel at Chase riffle, near little Shuswap lake.
No. 34.—A red spar on the east side of the channel at Chase riffle, north of No. 32.

(ENCLOSURE No. 5.)

STATEMENT, by localities, giving the number of unlighted buoys, stakes and bushes maintained throughout the Dominion during the fiscal year ending March 31, 1913.

NEW BRUNSWICK DISTRICT.

Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.	Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.
Aldouane, 25 bushes.. . . .	5	Miramichi river, Black brook.. . . .	3
Alma.. . . .	3	Miramichi river, southwest branch.. . . .	9
Baie Verte and port Elgin, 30 stakes..	6	Miramichi river, northwest branch.. . .	10
Bartibog, 12 bushes.. . . .	1	Miscou.. . . .	8
Bathurst.. . . .	26	Musquash.. . . .	4
Bay du Vin.. . . .	13	Negunac.. . . .	19
Beaver and Black harbours.. . . .	9	Napan river, 24 stakes.. . . .	3
Buctouche, 34 stakes.. . . .	22	Petit Rocher.. . . .	1
Buctouche river, 260 bushes.. . . .		Pisarinco.. . . .	2
Campobello.. . . .	10	Pokemouche, bushes.. . . .	6
Caraquet.. . . .	15	Richibucto and Albion.. . . .	33
Caraquet to Mizzenette.. . . .	3	Richibucto, Rexton and Browns yard.	30
Cocagne, 30 stakes.. . . .	11	Salmon river, bushing.. . . .	15
Dalhousie and Restigouche.. . . .	10	Shampers wharf, 15 stakes.. . . .	
Digdequash.. . . .	5	Shediac.. . . .	17
Dipper harbour.. . . .	8	Shippigan, 17 pickets, 14 bushes.. . .	20
Dorchester.. . . .	3	St. Andrews, 3 stakes.. . . .	16
Grand Anse.. . . .	4	St. Croix ledge.. . . .	11
Grand Dique, 30 stakes.. . . .	2	St. John river, 154 stakes.. . . .	73
Grand lake, bushes.. . . .	32	St. Louis, 35 bushes.. . . .	9
Grand Manan, 1 spindle.. . . .	38	St. Simon bay, Caraquet.. . . .	4
Grassy island, 18 stakes.. . . .	7	Tabusintac.. . . .	20
Great Shemogue.. . . .	7	Tracadie, north gully, 100 bushes.. . .	11
Harvey.. . . .	7	Tracadie, south gully, 30 bushes.. . .	5
Hartfield point, number of bushes....		Tynemouth creek.. . . .	3
Indian point bar channel, 10 bushes..	3	Washadamoak, 144 bushes.. . . .	2
Kouchibouguac and Black Lands gully, bushes.. . . .	12	Waweig river.. . . .	2
Letite and Back bay.. . . .	14	West isles, 4 spindles.. . . .	23
Little Shemogue, 1 beacon.. . . .	5	Maintained by agency—	
Little Shippigan.. . . .	3	Bell buoys.. . . .	23
Magaguadavic.. . . .	13	Whistling buoys.. . . .	7
Maquapit and French lakes.. . . .	8	Conical and can buoys.. . . .	136
Miramichi bay and river, bushes, 8 winter buoys.. . . .	31	Spar buoys.. . . .	25

NOVA SCOTIA DISTRICT.

Advocate harbour.. . . .	6	Bear river.. . . .	17
Amherst basin.. . . .	4	Beaver harbour, 8 winter buoys.. . .	8
Apple river.. . . .	8	Beaver narrows, C.B.. . . .	2
Arichat.. . . .	20	Blandford.. . . .	5
Argyle river and sound.. . . .	10	Bridgewater.. . . .	10
Avon river.. . . .	6	Brule, 5 stakes.. . . .	4
Barrington, 11 dolphins.. . . .	40	Calf island bay.. . . .	5

SESSIONAL PAPER No. 21

STATEMENT, by localities, giving the number of unlighted buoys, stakes, &c.—*Con.*NOVA SCOTIA DISTRICT—*Concluded.*

Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.	Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.
Canning or Habitant river, 6 dolphins.		Neil harbour..	1
Canso and St. Andrew passage, 20 winter buoys..	26	Northport..	12
Cape Negro or Northeast harbour.. .	17	North Sydney..	5
Caribou..	6	Orangedale..	3
Chester..	25	Parrsboro..	6
Cheticamp..	12	Pennant harbour..	9
Chezzetcook and Petpeswick.. . . .	10	Petitdegrat, 6 winter buoys.. . . .	14
Christmas island and Barra strait.. .	11	Pictou..	10
Clarke cove, West bay..	5	Pope harbour..	1
Clarke harbour..	17	Port Bickerton, 3 winter buoys.. . .	5
Cockerwit pass..	19	Port Felix..	11
Coddle harbour..	6	Port Hebert..	12
Cooks cove (Toby cove)..	4	Port Hood..	7
Crooked channel..	5	Port Latour..	16
Crow harbour..	3	Port Medway..	4
Descousse and Lennox passage.. . .	29	Port Morien..	2
Digby and Annapolis, 5 winter buoys.	14	Port Mouton..	9
Dover..	4	Port Philip..	12
East bay, Bras d'Or..	5	Pringle harbour..	4
East Dover..	4	Pubnico..	21
Eskasoni..	4	Pugwash..	9
Fourchu harbour..	11	River John, stakes..	8
Freeport..	3	Roseway..	3
French village, St. Margaret bay.. .	5	St. Anns..	5
Gegoggin..	7	St. Mary river, winter buoys.. . . .	9
Gillis point, Boulacet..	1	St. Mary river to Sherbrooke.. . . .	18
Glace bay..	4	St. Peter bay, 4 winter buoys.. . . .	15
Goose bay, 35 stakes..	8	St. Peter inlet..	10
Great Bras d'Or..	8	Sambro..	12
Guysboro..	3	Shad bay..	4
Harbour au Bouche, 6 stakes.. . . .	4	Shag harbour..	17
Indian harbour..	4	Shelburne..	25
Ingonish, South bay..	9	Sheet harbour, 5 winter buoys.. . .	9
Isaac harbour, 9 winter buoys.. . .	13	Ship harbour (Lower), 6 winter buoys	11
Jeddore, 8 winter buoys..	11	Ship rock, strait of Canso..	1
Johnson harbour..	5	Shulee..	6
Judique..	1	Smith island..	1
Ketch harbour..	6	Sober island to Ecum secum.. . . .	21
L'Ardoise..	5	Spry bay..	4
Lahave..	6	Stoney island, Baddeck..	1
Liscomb..	6	Sydney inner harbour..	2
Little Bras d'Or..	12	Tancook island..	3
Little Dover..	9	Tangier, 7 winter buoys..	4
Little Narrows..	10	Tatamagouche, 46 stakes..	18
Liverpool..	11	Terence bay..	3
Lunenburg..	8	Three-Fathom harbour..	5
Lunenburg, back cove..	9	Tidnish, stakes..	5
Lunenburg, middle south, 6 winter buoys..	16	Terbay..	19
Louisburg, 3 winter buoys..	8	Tusket river..	9
Lower Prospect..	10	Tusket Wedge, 3 spindles..	17
Mabou, stakes..	19	Upper Prospect..	4
Margaree harbour, 2 stakes.. . . .	7	Volgers cove..	3
Mahone bay..	9	Wallace, 33 stakes..	11
Main-à-Dieu..	5	Walton harbour..	1
Marie Joseph, 10 winter buoys.. . .	13	Washaback river..	7
Martins brook..	6	West bay..	5
McKinnon harbour..	6	West Chezzetcook..	7
McNabs cove..	2	West Dublin..	12
McVarish shoal and Campbells point, Bras d'Or..	4	Weymouth..	13
Merigomish, bushes..	6	Whitehaven, 5 winter buoys.. . . .	8
Meteghan river..	2	Yarmouth, 38 bushes..	12
Monsellier, 4 stakes..	6	Maintained by agency—	
Musquodoboit..	7	Bell buoys..	49
		Whistling buoys..	19
		Conical and can buoys..	66
		Spar buoys..	28

STATEMENT, by localities, giving the number of unlighted buoys, stakes, &c.—*Con.*

PRINCE EDWARD ISLAND DISTRICT.

Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.	Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.
Bay Fortune.. . . .	3	Miminegash.. . . .	6
Beach point.. . . .	3	Montague.. . . .	7
Bedeque.. . . .	11	Murray harbour, 9 stakes.. . . .	29
Belle river.. . . .	3	New London, stakes.. . . .	9
Brae harbour.. . . .	5	Orwell and Vernon river, 36 bushes..	
Brudenell river.. . . .	4	Pinette, bushes.. . . .	7
Cardigan, lower, 2 winter buoys.. . . .	7	Port Hill.. . . .	12
Cardigan, upper.. . . .	20	Pownall, 10 stakes.. . . .	7
Cascumpec.. . . .	16	Rollo bay.. . . .	3
Charlottetown, staking North and West rivers.. . . .		Rustico.. . . .	5
Covehead.. . . .	3	Savage harbour.. . . .	2
Crapaud, stakes.. . . .	6	Souris.. . . .	4
East river (Hillsboro).. . . .	18	St. Peter harbour.. . . .	10
Egmont bay, north, 16 stakes.. . . .	7	Summerside, stakes.. . . .	11
Egmont bay, south, 8 stakes.. . . .	2	Tignish.. . . .	4
Georgetown.. . . .	19	West point.. . . .	2
Goose harbour.. . . .	2	Wood island.. . . .	4
Grand river, 1 beacon, bushes.. . . .	12	Maintained by agency—	
Grand river, lot 14.. . . .	8	Bell buoys.. . . .	2
Grand Tracadie.. . . .	4	Whistling buoys.. . . .	2
Little channel.. . . .	3	Conical and can buoys.. . . .	21
Malpeque.. . . .	16	Spar buoys.. . . .	6

QUEBEC DISTRICT.

Anse à Beaufile.. . . .	1	Magdalen islands, Grand Entry.. . . .	17
Anse à Gascons.. . . .	1	Magdalen islands, House harbour.. . .	11
Barachois de Malbaie.. . . .	1	Maria.. . . .	2
Beauport.. . . .	3	Matane.. . . .	2
Bonaventure river.. . . .	11	Natashkwan.. . . .	3
Cape Chatte.. . . .	1	New Richmond.. . . .	4
Cape Cove.. . . .	1	North channel, island of Orleans.. . .	13
Cape Despair.. . . .	1	Nouvelle.. . . .	2
Carleton point.. . . .	1	Paspebiac.. . . .	1
Eschourie rock (Serpent reef).. . . .	1	Pentecost.. . . .	1
Fox river.. . . .	1	Percé.. . . .	2
Gaspé.. . . .	6	Point St. Peter.. . . .	1
Gros Cap-aux-Os.. . . .	1	Port Daniel.. . . .	1
Lake St. John.. . . .	14	Restigouche river.. . . .	12
Lake St. John, Ashuapmouchouan river, 30 bushes.. . . .	7	Ste. Anne river.. . . .	1
Lake St. John, Mistassini river, 60 bushes.. . . .	12	St. Godfroy.. . . .	1
Lake St. John, Peribonka river and Roberval, 35 bushes.. . . .	16	St. Michel.. . . .	4
Little river east.. . . .	1	St. Thomas de Montmagny.. . . .	14
Little river west.. . . .	1	Saguenay river, vicinity of Chicoutimi	33
Magdalen islands.. . . .	12	Maintained by agency—	
Magdalen islands, Amherst harbour.. .	8	Bell buoys.. . . .	1
		Whistling buoys.. . . .	1
		Conical and can buoys.. . . .	34
		Spar buoys.. . . .	12

MONTREAL DISTRICT.

Lake Memphramagog.. . . .	1	Rivière des Prairies.. . . .	11
Richelieu river, above St. Johns.. . .	27	Maintained by agency—	
Richelieu river, Sorel to Chamoly.. . .	37	Conical and can.. . . .	34
Richelieu rapids, bushes.. . . .		Spar buoys.. . . .	272

ONTARIO DISTRICT.

Blind river.. . . .	5	Grand reef, lake Superior.. . . .	1
Burke shoal, lake Superior.. . . .	1	Kaministiquia river, Fort William, lake Superior.. . . .	8
Cache bay, lake Nipissing, 8 stakes.. .		Lake Simcoe.. . . .	6
Clapperton channeel, 1 beacon.. . . .	9	Lake Superior, south eastern part.. . .	7
Detroit river.. . . .	52	Lake Temiscaming, bushes.. . . .	9
Goderich.. . . .	5		

SESSIONAL PAPER No. 21

STATEMENT, by localities, giving the number of unlighted buoys, stakes, &c. *Con.*ONTARIO DISTRICT—*Concluded.*

Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.	Name of locality; and No. of stakes, bushes, etc.	No. of Buoys.
Lake of the Woods.. . . .	240	Stokes bay.. . . .	6
Little Current.. . . .	11	Saugeen river.. . . .	8
Michipicoten.. . . .	8	Sturgeon river.. . . .	25
Midland.. . . .	6	Timagami lake, 4 beacons.. . . .	31
Mutton island, lake Superior.. . . .	1	Trent canal system (maintained by dept. Railways and Canals).. . . .	
Niagara river.. . . .	2	Victoria island, lake Superior.. . . .	3
Orillia, 11 bushes.. . . .	7	Victoria harbour, Georgian bay.. . . .	1
Pembroke.. . . .	23	Waubauskene.. . . .	49
Penetanguishene.. . . .	10	Warrens landing, lake Winnipeg.. . . .	12
Point au Baril, 15 beacons.. . . .	4	Winnipeg river.. . . .	13
Port Arthur.. . . .	19	Maintained by Parry Sound agency—	
Port Rowan.. . . .	10	Bell buoys.. . . .	2
Presqu'île bay, lake Ontario.. . . .	18	Conical buoy.. . . .	1
River Thames.. . . .	7	Spar buoys.. . . .	107
Rondeau.. . . .	6	Maintained by Prescott agency—	
St. Clair river, chenel Ecarté.. . . .	1	Conical, can, spherical.. . . .	17
St. Joseph channel, lake Huron, 6 winter buoys.. . . .	17	Barrel buoys.. . . .	2
Sault Ste. Marie canal approaches.. . . .	25	Spar buoys.. . . .	75
South Baymouth.. . . .	4		

BRITISH COLUMBIA DISTRICT.

Arrow lakes, Upper and Lower.. . . .	15	Maintained by agency—	
Coal harbour.. . . .	10	Bell buoys.. . . .	3
Fraser river.. . . .	23	Whistling buoys.. . . .	2
Kootenay lake.. . . .	11	Conical and can buoys.. . . .	33
South Thompson river, 4 day beacons.. . . .	18	Platform buoys.. . . .	29
		Spar buoys.. . . .	49

APPENDIX No. 3.

RIVER ST. LAWRENCE SHIP CHANNEL.

OTTAWA, August 7, 1913.

The Deputy Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—I have the honour to present the following annual report on the operations for the improvements of the river St. Lawrence ship channel during the fiscal year ending March 31, 1913. The completion and opening, during the fiscal year, of the south channel below Quebec, to 30 feet at extreme low tide, cannot fail to be of great satisfaction to those interested in the St. Lawrence route.

I have the honour to be, sir,
Yours obediently,

V. W. FORNERET, B.A., Sc.,
Superintending Engineer.

HISTORY OF THE SHIP CHANNEL.

The St. Lawrence, owing to its situation, is the natural route from the Atlantic to the northern and northwestern half of the North American continent.

The opening of the Lachine canal, connecting Montreal with the Great Lakes, in 1825, established the route commercially.

The light-draught sailing vessels could then reach Montreal without trouble, except during a few weeks in the autumn, when they resorted to lightering.

In 1844, it was in an effort to give navigation up to Montreal for vessels of 500 tons, that the first work of dredging was undertaken.

The first proposals for improvements were discussed in 1825, the national character of the work being then recognized. Surveys were made and reported upon in 1831 and again in 1838.

In 1841, during an investigation, the committee proposed a tonnage duty sufficient to provide for the cost of the improved channel, which was considered would be less than that of lighterage. It was, however, agreed that in order to draw the produce of the west down the St. Lawrence it was expedient to make the transit charges as light as possible.

Operations were commenced by the 'Board of Works' in 1844 and continued until 1847 when, owing to opposition as to the location of the channel, in lake St. Peter, the work was abandoned.

After 60 years it is now considered that the straight channel, as commenced, would have been preferable in many ways.

In 1850, the harbour commissioners of Montreal proposed that they could do the work more economically and expeditiously. They asked for authority to undertake the work and to charge a tonnage duty to pay for the 8 per cent interest and 2 per cent sinking fund.

SESSIONAL PAPER No. 21

This plan was adopted in August, 1850, and the commissioners were authorized to proceed in such a manner as they should deem best, the Government plant being transferred to them.

The harbour commissioners, after examination and the best advice obtainable, adopted the location of the deepest natural channel in lake St. Peter. This results in the present channel with five tangents, instead of two long straight courses as at first commenced.

The original depth through lake Peter was 10 feet 6 inches.

From 1850 the channel was deepened from stage to stage until in 1888, when the debt amounted to somewhat over three million dollars, the Government decided to complete the channel as a national work, and to assume the debt, and from that day the channel has been open free to the commerce of the world.

At that date the channel had been deepened to 27½ feet at ordinary low water from Montreal to Cap à la Roche, and from there to Quebec the tide was available.

The work was then conducted by the department of Public Works of Canada from 1889 until 1904, when the management and control of the river, together with the shops and dredges, were handed over to the department of Marine and Fisheries, which department had general charge of navigation.

At the present time a splendid channel of 30 feet at extreme low water exists from Montreal to Cap à la Roche, and to Quebec by taking advantage of the tide.

The success of the work is, in a great measure, due to the geographical situation of the route, the physical features of the river being favourable for improvement, the determination and public spirit of the business men and industrial corporations of Montreal, and to the recognition by the Government of Canada of the national character of the project.

ACCIDENTS IN THE ST. LAWRENCE RIVER BETWEEN MONTREAL AND FATHER POINT.

Between Montreal and Quebec.

Very few accidents occurred in this section of the river during the season of navigation of 1912, and they were all of a minor nature, and none could be attributed to some fault of the ship channel.

They were as follows:—

SS. *Lake Champlain* grounded outside of channel opposite Longue Pointe, Montreal Harbour; very slight damage. September 3, 1912.

SS. *Hungarian* grounded outside of channel opposite Contrecoeur; no damage. September 6, 1912.

Steam barge *Mapleton* grounded outside of channel, opposite Longueuil, Montreal harbour; no damage. October 11, 1912.

Between Quebec and Father Point.

This section of the river was most unfortunate during the season of 1912, as several accidents occurred, some of them of a serious nature, but none could be charged to some defect in the ship channel.

SS. *Manchester Importer* stranded at White Island; slight damages. May 17, 1912.

SS. *Boethic* stranded on Hare island; damaged. September 16, 1912.

Steam barge *John B. Ketchum* stranded 20 miles below Quebec; slight damage. September 27, 1912.

SS. *Bellona* stranded at Upper Traverse; seriously damaged. October 3, 1912.

SS. *Inisowhere Head* stranded on south side of east end of the Middle Ground Traverse; no damage. October 25, 1912.

4 GEORGE V., A. 1914

SS. *Gladstone* stranded just above St. Laurent wharf, Island of Orleans; seriously damaged. November 5, 1912.

SS. *Royal George* stranded below St. Laurent wharf, island of Orleans; seriously damaged. November 6, 1912.

SS. *Montreal* and schooner *Lel* collided near Island of Orleans; schooner *Lel* was sunk and one man was drowned. November 8, 1912.

MARINE SIGNAL SERVICE—RIVER ST. LAWRENCE SHIP CHANNEL.

There are thirteen stations established at the following places:—

Name of place.	Locality.	Nautical miles below Montreal.	In operation.
Montreal	Top floor Sauvegarde building, corner Notre Dame and St. Vincent streets.	00	Day and night.
Longue Pointe	On the extreme point.	5	"
Verchères	In the Windmill near the wharf.	19	During daylight.
Sorel	On the Government wharf.	39	Day and night
Three Rivers.	On the upper end of Bureau wharf	71	"
Batiscan	At the wharf	87	"
St. Jean des Chaillons	On the hill at the semaphore.	93	"
Grondines	In old windmill.	97	"
Portneuf.	In the front range lighthouse.	168	During daylight.
St. Nicholas.	At semaphore station on summit of hill	127	Day and night.
Bridge	On point above Quebec bridge.. . . .	133	During daylight.
Quebec	In dome of custom building.	139	Day and night.
Crane Island.	On the wharf.	171	"

These stations are connected by a private telephone system, terminating at Quebec and Montreal, with the exception of Crane island, which communicates with Quebec via the Bell Telephone Company's system.

Each of these stations, with the exception of Montreal and Quebec is provided with a mast 60 feet in height with a cross spar 20 feet long about 20 feet from the top of the mast.

When the station is in operation, a 'Jack' is hoisted to the mast head during daylight, and a white light at night.

Signals displayed at west end of cross spar indicate river or points above station.

Signals displayed at east end of cross spar indicate river or points below station.

For other communications between vessels and stations or vice-versa, the international code of signals is used.

This service was begun on September 1, 1907, and has proved to be very useful, as weather conditions and movements of vessels along the river can be reported from all the stations, and the information furnished to all the shipping agencies.

All of the stations were kept in good repair during the past season, and certain improvements made to some of them.

The Quebec station was transferred from the Marine and Fisheries building to more commodious quarters in the custom house building, which has been rebuilt. A splendid view of Quebec harbour is obtained from this station, which is located in the 'dome' of the building, and the shipping agencies can now be kept better posted with regard to the movements of vessels in the harbour. It is also very well situated for distributing the daily reports promptly.

A new signal station has been put into operation at Grondines, P.Q. The old windmill situated on the point has been restored and converted into a telephonic and reporting station. The station is in operation day and night.

SESSIONAL PAPER No. 21

It is proposed to start a supplementary code of signals to be used by the Batiscan and Grondines signal stations to indicate the movements of steam vessels between the two stations.

The Montreal office was also transferred, at the end of the fiscal year, to new quarters. These are located on the eleventh floor of the new Sauvegarde building, corner of Notre Dame and St. Vincent streets, where a very good view of all the harbour is obtained.

ICEBREAKING.

QUEBEC, May 1, 1913.

SIR,—I have the honour to submit the following report on the work of the ice-breakers *Lady Grey* and *Montcalm* during the winter of 1912-13.

At the end of the season of navigation of 1912 the *Lady Grey* was detailed for the usual duty of helping the last ships through the ice, and giving assistance to the buoy service. No difficulty was experienced from ice, the last vessel, the steam barge *Samuel Marshall* passed out unaided on December 6, and returned up river on December 10, wintering at Sorel. The following day the *Lady Grey* left Three Rivers and proceeded to Quebec to take up the work of guarding Cap Rouge during the winter.

The months of December and January were mild, especially the latter month. About the 1st of February the temperature dropped, and throughout the month the weather was exceptionally severe.

The ice-bridge formed at Port St. Francis on December 22, and at Sorel on December 24; owing to the mild weather the ice shoved from Sorel to Three Rivers on January 4. On January 5, this movement ceased at Three Rivers, and at Sorel on January 8. The ice remained solid for the rest of the winter.

During the months of December and January the *Lady Grey* and *Montcalm* performed the usual patrol duty to Cap Rouge, but owing to the mild season, it was only necessary to go up occasionally to obtain information about the battures and the general condition of the river.

On the 9th of February, a few days after the cold weather had set in, the first jam occurred at Cap Rouge, followed by one on the 23rd, and another on the 24th. These jams were caused, as usual, by heavy battures breaking away above and blocking near the bridge. The two ice-breakers working together were able in every case to break up the blocks of ice; but on one occasion, February 23, their powers were taxed to the utmost, and they succeeded in breaking through only by a very narrow margin before the rising tide made it impossible to work longer.

Time is of the utmost importance when dealing with these jams. After the first batture has stopped, the light ice from above banks up very rapidly underneath, and in a very short time the blockade has assumed serious proportions.

The Signal Service renders invaluable aid to the ice-breakers every winter. From their reports, the conditions on the river are pretty well known, and all large fields of ice are at once reported to the captains of the ice-breakers. Having this information, it is often possible to meet and break up heavy fields of ice in the wide water near St. Nicholas, before it has a chance to get down as far as the bridge and, in any case, if a jam does occur, it is immediately reported, and the ice-breakers are enabled to come up at the earliest possible moment.

On February 8, a heavy batture broke away from Grondines, and blocked opposite Lotbinière wharf. Previous to this, the river had been open as far as Three Rivers. As the *Lady Grey* had been cut off from Quebec in January, 1912, and had to winter at Three Rivers owing to a jam at Cap Rouge, which the *Montcalm* alone was unable to break up, it was considered unsafe to send her to Lotbinière.

By February 24, the ice had backed up as far as Baptist's island, near Three Rivers, and the river was covered with ice from Lotbinière to Montreal, with the exception of about two miles abreast of Three Rivers, which remained open all winter.

No more jamming occurred at Cap Rouge after February 24, and on March 11, the *Montcalm* began the work of opening the river from Lotbinière upwards.

It was found that the first half mile of the jam at Lotbinière was from 30 to 40 feet in thickness, and above that, to within about three-quarters of a mile of Cap Charles, that it averaged about 12 feet, the whole distance of 6 miles being packed ice, and very difficult to break up.

The work proceeded very slowly, as the *Montcalm* worked alone from March 11 until March 17, returning to Quebec every night. This was necessary as the battures at St. Croix bay and Les Ecureuils were still holding. Consequently the *Lady Grey* had to remain at Quebec in case of a jam occurring at Cap Rouge.

On March 18, both ships began working together and continued until March 25, when the head of the cut had been pushed to a point about three-quarters of a mile below Cap Charles, and all of the heavy packed ice had been broken up. From this point upwards, the ice was light, averaging about 12 inches in thickness.

No work was done on March 26 and 27, owing to a heavy northeast wind and thick weather. On March 28, it was found that the gale had broken up the ice as far as Batiscan.

The two ships worked together on March 28, opening a very wide channel as far as Pte. Citrouille. This, however, proved to be unsafe, as owing to the very high water the ice was liable to break away in very large fields, and there was danger of being cut off from below. The *Montcalm* was detailed to stand by at Batture Simon, the narrowest part, to break up any jam that might occur there, and the *Lady Grey* continued working upwards alone. This cut down the advance per day by about half, but insured safety.

The *Lady Grey* reached Three Rivers at 8 p.m. April 1, having experienced no special difficulty from Pte. Citrouille, the ice being light, averaging about 12 inches.

The *Montcalm* joined the *Lady Grey* at Three Rivers on April 2, and on April 3 both ships began working upwards again. The work was pushed steadily ahead, and by April 6 the river was wide open up to the foot of lake St. Peter. Operations were carried on in the lake until April 14, when all the ice on the south side of the channel had passed out, the ice on the north side still remaining. The channel from the head of lake St. Peter to Montreal was also clear on this date.

On April 15, the *Montcalm* returned to Quebec, and the *Lady Grey* came through to Sorel. The ice on the north side of lake St. Peter did not pass out until April 16, but it was very soft and required no attention.

The general public appears to have the idea that all the ice-breakers have to do is to smash their way through the ice without stop or interruption, but it is not quite as easily done as that.

When working through ice, where there is a strong current, such as we have between Three Rivers and Quebec, the greatest care and watchfulness is required. It is impossible to foresee exactly what may happen, or how the ice may break. Working in a narrow channel, should a large field of ice break away, a matter of a very few minutes may cause the ice-breakers to be cut off from below, and this large field may jam. If a jam forms below, it is almost an impossibility for an ice-breaker to work through it from above. Should the ships be cut off in this manner, they are at once in a dangerous position, and liable to be forced ashore by more ice coming from above. Therefore, the work must be done carefully, cutting out as wide a channel as possible, so as to provide a safe retreat. To do this, time is required.

The usefulness of the ice-breakers was again very clearly proved this season, for there was no serious flooding. The water rose at Three Rivers to a point 14 feet

SESSIONAL PAPER No. 21

above extreme low water, or about 1 foot over Bureau wharf; but as soon as the heavy ice had been cut out between Lotbinière and Cap Charles, the water immediately began to subside.

In 1912, the ice-breaking service broke down, owing to the fact that the *Lady Grey* was cut off from Quebec and had to winter in Three Rivers, the *Montcalm* alone not being able to contend with the ice at Cap Rouge. As a result, the river was covered with ice from Cap Rouge to Montreal, and there was very severe flooding in the spring, the water reaching a height of 18 feet 4 inches above extreme low water at Three Rivers.

This year, the river was open on April 14, but in 1912, when the work was left to nature, it was only clear of ice on April 29.

With the aid of another ice-breaker, such as it is the intention of the department to have constructed, I feel confident that it will be possible to keep the river open to Three Rivers, and, with an open channel to this point, all danger from flooding ceases.

Again, with the river open to Three Rivers, the work of breaking up the ice in lake St. Peter and above can be commenced, say, the 1st of March, and consequently, the whole river from Quebec to Montreal can be opened earlier.

I have the honour to be, sir,
Your obedient servant,

N. B. McLEAN,
Resident Engineer.

V. W. FORNERET, Esq., C.E.,
Superintending Engineer,
River St. Lawrence Ship Channel,
Dept. Marine & Fisheries,
Sorel, Que.

GENERAL INFORMATION.

The project for the 30-foot channel between Montreal and Quebec, which had in view a channel of 30-foot depth, at the extreme low water of 1897, was adopted in 1889. The width contemplated was 450 feet on the tangents, as this was the satisfactory limit for a dredge, when working in radial method, as adopted on the ship channel. The curves were to be made as flat as possible, and to a width of from 500 to 750 feet. An anchorage was to be provided for in lake St. Peter, 800 feet in width.

The 30-foot channel is now completed to the upper end of Cap à la Roche curve, a distance of 107½ miles from Montreal.

A large proportion of Cap à la Roche curve is completed, while the widening and deepening of the Cap Charles channel is completed with the exception of a small portion at the upper end of Cap Charles curve.

It is expected that the widening of Cap à la Roche curve, as well as Cap Charles curve, will be completed next season, while the deepening should take another additional season. The shale rock appears to be getting harder, the deeper you dredge, which delays the completion of the work very much. The Lobnitz rock cutter has been very useful in breaking up this hard rock for the dredges. The strain on the dredging machinery was much reduced and, consequently, there were fewer breakdowns.

The average depth in the 30-foot channel, which was very good during the season of 1912, was as follows:—

May, 37 feet 9 inches; June, 37 feet 6 inches; July, 33 feet 6 inches; August, 32 feet 8 inches; September, 32 feet 6 inches; October, 32 feet 6 inches; November, 34 feet 9 inches.

4 GEORGE V., A. 1914

The greatest depth from May to November was 40 feet 11 inches, and the least, during the month of October, was 31 feet 3 inches.

The length of the 30-foot channel actually completed at the close of the season of navigation of 1912, equals 61.15 statute miles. The total length requiring dredging is 63.35 miles, there remaining 2.20 miles yet to be done.

The project of the work below Quebec had in view a channel of 30-foot depth at extreme low tide, and 1,000 feet in width.

The channel at Beaujeu bank was completed in 1910, and at St. Thomas flats at the end of the season of 1911. There still remained some cleaning up, after it was proved with the sounding scow; this was done during the early part of the season of 1912. The south channel was then well marked out with gas buoys, and opened to navigation.

Now, vessels are not obliged to anchor to await the tide to pass at Beaujeu or St. Thomas flats, thereby saving much valuable time.

As the Government had decided to dredge the north channel between St. Jean, Island of Orleans, and Goose cape, to a depth of 35 feet at extreme low tide and 1,000 feet in width, the dredges *Beaujeu* (No. 8) and *Galveston* (No. 9) were detailed for this work.

At the end of the season of 1912, 2,895,200 cubic yards had been dredged, there remaining 13,257,973 cubic yards yet to be removed. With the present plant, it would occupy about five more seasons to complete the channel, but owing to the request of the shipping interests to hasten the work as much as possible, it is the intention of the department to have an additional dredge built for this work, this dredge to be very powerful, and one of the largest of its kind, which will be of the ladder type, capable of discharging in its own hoppers or into barges.

With regard to the deepening of the channel between Montreal and Quebec to 35 feet at extreme low water of 1897, some progress has been made.

Of a total length of 82.24 statute miles, 11.92 miles have been done, there remaining 70.32 miles yet to be dredged.

The channel approach to the floating dock basin, Montreal harbour, was completed to a width of 450 feet and 30 feet depth, at the end of the season. It will probably take another season to finish the widening, and clean up any silting that may have occurred.

The two semaphores, indicating the channel depths in their respective localities, were maintained as usual, the one at Deschaillons for the depth in the Cap à la Roche dredged cut, and the other at St. Nicholas for the depth over the undredged St. Augustin bar.

The Cap à la Roche semaphore was started on May 10, 1912, and the one at St. Nicholas on May 14, 1912.

A notable event of the season was the arrival of the floating dock *Duke of Connaught*, which was successfully towed over by two Dutch tugs, and was safely tied up in the basin which had been prepared for it at Montreal. This dock was built by Vickers, Sons and Maxim, Ltd., Barrow-in-Furness, and is considered to be a valuable addition to the equipment of Montreal harbour. It has a lifting capacity of 25,000 tons; therefore, in the event of a steamer coming up the St. Lawrence requiring to be placed in dry-dock for repairs, and is too large for the Lévis dry-dock, it can have the work done at this dock. There are about twenty vessels at the present time coming up the St. Lawrence river that are too large for the Lévis dry-dock.

Good progress was made on the new Repentigny steamboat channel (north channel) between Ile Ste. Thérèse and Lavaltrie, and it is expected that it will be completed next season. This channel is being dredged to a depth of 15 feet at extreme low water of 1897, and 300 feet in width. It is intended to be used by all light-draught vessels and tows, in order to relieve the ship channel.

SESSIONAL PAPER No. 21

The annual trip of inspection of the ship channel, and the works connected therewith was made by the Honourable the Minister on October 2, 1912.

The steamer *Earl Grey* left her berth opposite the Montreal Harbour building 35 feet at extreme low tide. Much satisfaction was expressed that the Government days were spent inspecting the various works as far as the foot of the Island of Orleans, where the dredges are working deepening the north channel to a depth of 35 feet at extreme low tide. Much satisfaction was expressed that the Government had decided to go on with this work.

The Minister, the Honourable Mr. Hazen, was accompanied by his officials, representatives of the Shipping Federation of Canada, Montreal Board of Trade, La Chambre de Commerce, Montreal and Quebec Harbour Commissioners, and the Montreal and Quebec Pilots.

The total cost, from 1851 to the close of the fiscal year, of the ship channel, including plant, shops, surveys, etc., is as follows:—

Dredging..	\$ 9,610,259 57
Plant, shops, surveys, etc..	6,007,633 54
	<hr/>
	\$15,617,893 11

The number of cubic yards dredged amounted to 85,160,875, the material varying from very hard shale rock to soft blue clay.

Year.	AVERAGE DEPTH FOR EACH MONTH IN THE 27½ FOOT CHANNEL. (27½ feet at ordinary low water.)							FROM SOREL GAUGE DURING EACH YEAR, MAY TO NOVEMBER.	
	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Highest.	Lowest.
	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.
1890.....	35 6	35 3	31 9	30 6	30 9	29 9	30 6	37 0	29 0
1891.....	34 6	31 3	29 9	29 9	30 0	28 3	28 3	36 9	27 3
1892.....	31 0	31 9	31 6	30 6	28 9	28 3	28 3	33 6	27 3
1893.....	36 0	34 3	30 9	29 9	29 6	28 6	28 0	37 6	27 6
1894.....	34 6	31 9	31 0	29 2	28 3	28 9	29 0	36 0	27 7
1895.....	33 3	31 3	28 3	28 3	27 6	26 9	26 9	34 6	25 10
1896.....	33 6	30 6	28 9	28 0	27 6	27 9	29 0	37 0	27 4
1897.....	35 6	32 6	30 3	29 3	28 0	27 0	27 6	37 0	26 3
1898.....	31 6	30 9	29 8	28 2	28 2	28 3	28 6	32 1	26 9
1899.....	36 2	31 9	30 3	28 6	27 6	28 0	27 9	37 9	26 9
1900.....	33 6	30 9	30 6	29 6	28 1	28 9	29 2	35 9	27 4
1901.....	34 3	31 10	29 2	28 3	27 7	27 4	27 3	36 3	26 6
1902.....	32 2	32 2	32 2	29 4	28 1	28 1	29 0	34 1	27 6
1903.....	33 0	30 11	30 5	29 5	28 4	29 0	27 11	32 8	26 11
1904.....	36 3	34 5	30 9	29 5	29 5	30 4	29 3	37 4	28 1
1905.....	31 10	30 8	29 7	29 0	28 0	28 5	28 1	33 6	27 1
1906.....	32 4	31 5	29 3	27 11	27 3	27 4	27 6	33 3	26 9
—	AVERAGE DEPTH FOR EACH MONTH IN THE 30 FOOT CHANNEL. (30 feet at extreme low water of 1897.)								
1907.....	37 1	35 9	34 3	32 10	32 4	32 9	33 7	38 3	31 10
1908.....	41 5	37 10	33 10	32 10	32 0	31 0	30 6	42 4	30 0
1909.....	40 6	37 6	33 10	33 2	32 7	32 4	31 6	42 7	30 11
1910.....	35 7	34 5	32 3	31 7	31 6	31 6	31 7	37 1	30 7
1911.....	36 6	34 6	32 1	31 3	30 9	30 2	30 3	38 1	29 4
1912.....	37 9	37 6	33 6	32 8	32 6	32 6	34 9	40 11	31 3

COST OF SHIP CHANNEL TO DATE.

TABLE showing the total cost of the dredging and plant and the quantities dredged to March 31, 1913.

	Cost of Dredging.	Expenditure for Plant, Shops, Surveys, &c.	Quantities Dredged.
	\$ cts.	\$ cts.	Cubic Yards.
<i>Montreal Harbour Commissioners, 1851 to 1888.</i>			
Dredging Montreal to Cap à la Roche to 27½ feet at O.L.W. and from Cap à la Roche to Quebec to 27½ feet at half tide.....	3,402,494 35	534,809 65	19,865,69
<i>Department of Public Works.</i>			
Dredging consisting of widening and cleaning up of Channel, deepening Cap à la Roche to Cap Charles to 27½ feet at O.L.W., and dredging at Grondines, Lotbinière and Ste. Croix, 1889 to June 30, 1899....	829,583 08	486,971 79	3,558,733
<i>Project of 1899.</i>			
Dredging channel between Montreal and Quebec to 30 feet at lowest water of 1897, also widening to a minimum width of 450 feet and straightening.			
Fiscal year 1899-1900.....	100,191 01	265,270 78	1,107,894
" 1900-1901.....	136,680 83	287,040 01	2,479,385
" 1901-1902	185,429 80	479,731 47	3,098,350
" 1902-1903.....	255,776 55	277,703 50	6,544,605
" 1903-1904	276,958 59	308,765 44	4,619,260
<i>Department of Marine and Fisheries.</i>			
This includes the work below Quebec.			
Fiscal year 1904-1905.....	311,087 93	277,225 69	2,716,220
" 1905-1906	431,768 30	317,327 37	4,047,530
" 1906-1907 (July 1, 1906 to March 31, 1907.....	302,677 37	275,003 61	3,001,010
" 1907-1908.....	478,209 66	417,390 22	4,831,875
" 1908-1909.....	497,686 03	340,861 86	5,896,737
" 1909-1910.	572,950 71	321,375 80	6,354,285
" 1910-1911	576,838 02	488,248 88	5,609,050
" 1911-1912.....	588,697 60	499,799 58	4,509,904
" 1912-1913.....	663,229 74	430,107 86	6,929,344
	9,610,259 57	6,007,633 54	85,160,875

DREDGING OPERATIONS.

Elevator dredge 'Laval' (No. 1).

This is the oldest dredge in the Ship Channel fleet. The hull is of wood, constructed at Ottawa in 1894. The buckets are made of cast steel for work in rock and other hard material.

During the winter of 1911-12 this dredge was given a throrough overhauling, and her machinery put in good order for the next season's work.

SESSIONAL PAPER No. 21

The details of the operations for the fiscal year beginning April 1, 1912, were as follows:—

Dredge *No. 1* left Sorel on May 13, and was taken up to Montreal, where she was laid out opposite Longueuil ferry to widen and deepen the ship channel through Montreal harbour, the material being stones and gravel.

The work to be done was cleaning up small irregular lumps and patches. This involved covering as much ground as though a fair average cut had been carried, but gave a low return for the number of cubic yards dredged, and consequently a high cost per cubic yard.

Dredge *No. 1* was employed during the whole season in Montreal harbour, and was brought back to Sorel on November 22 to go into winter quarters.

In a total of 162 days, during which dredge *No. 1* was at work, her machinery was in actual operation 69 per cent of the full working time.

The total number of cubic yards dredged amounted to 71,200, at a cost of \$50,314.89 or 70⁶⁶/₁₀₀ cents per cubic yard.

Elevator dredge 'Laurier' (No. 2).

The hull of this dredge is also of wood, having been constructed at the Government shipyard at Sorel in 1897. She is equipped with a set of cast steel buckets, especially designed for work in rock and other hard material.

During the winter of 1911-12 this dredge was given the usual overhauling.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge *No. 2* left Sorel for Varennes on May 6, and was laid out to work at Varennes curve to widen and deepen the channel to 35 feet at low water of 1897, the material being soft clay. The dredge continued there until June 13.

On the above date she was taken down to Cap Charles channel, and there laid out to deepen the channel to 30 feet at low water of 1897, the material being shale rock, hard-pan and boulders.

The progress of this dredge was greatly reduced, owing to the fact that a large number of stones and boulders had to be lifted by means of the stone lifter. Time was lost from August 5 to 10, inclusive, as the dredge had to be taken up to Sorel for repairs to the boilers.

No. 2 continued working in Cap Charles channel until October 22, when she was moved back to Varennes curve. There the work of widening and deepening was continued where it was left off in the early summer, and work was carried on until November 26, when the dredge was brought back to Sorel for winter quarters.

In a total of 165 days during which dredge *No. 2* was at work, her machinery was in actual operation 58 per cent of the full working time.

The total number of cubic yards dredged mounted to 186,410, at a cost of \$45,975.76 or 24⁶⁶/₁₀₀ cents per cubic yard.

Elevator dredge 'Aberdeen' (No. 3).

The hull of this dredge is of steel, the complete vessel having been constructed at Sorel shipyard in 1900. The buckets are of cast steel for working in hard material.

During the winter of 1911-12 this dredge was given a good overhauling and put in first-class condition for the next season.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge *No. 3* was brought up from Sorel on May 6, and laid out at Varennes curve to deepen and widen the channel there to 35 feet at low water of 1897. The material dredged was soft clay. Work was carried on until June 11.

On June 11, dredge *No. 3* was moved down to Grondines, where she was set to

4 GEORGE V., A. 1914

work deepening and widening to 30 feet at low water of 1897, and continued working there excavating clay and embedded boulders until July 9.

On this date, *No. 3* was moved to Cap Charles curve where deepening and widening operations were carried on, to 30 feet at low water of 1897, the material dredged being shale rock, which had been broken by the rock-cutter. Five days were lost, from July 25 to 30, due to the breaking of the bow winch, and the repairs which this involved.

This dredge was moved back to Grondines on August 1, and began again where the work was left off on June 11; widening and deepening operations were carried on as before until September 5.

The dredge was again taken up to Cap Charles curve on September 5, where she worked widening, deepening and excavating shale rock which had been broken by the rock-cutter, until October 7.

On the latter date, *No. 3* was laid out once more at Grondines, and continued her work there until November 5.

Dredge *No. 3* was, on November 5, taken up and laid out at Ste. Anne Traverse, where she worked deepening and widening to 35 feet at low water of 1897, the material dredged being clay. She was brought into winter quarters at Sorel on November 28.

The working time of dredge *No. 3* was 172 days, the dredge being in actual operation 69 per cent of the full working time.

The total number of cubic yards removed amounting to 201,474 cubic yards, at a cost of \$42,812.34 or $21\frac{24}{100}$ cents per cubic yard.

Elevator Dredge 'Lady Minto' (No. 4).

This dredge is of the same type and design as *No. 3*, and was constructed at Sorel shipyard in 1900. *No. 4* is also provided with cast steel buckets for dredging in rock and other hard material.

During the winter of 1911-12 the dredge received all necessary repairs and overhauling to put her in satisfactory shape for the next season's work.

The details of the operations during the season commencing April 1, 1912, were as follows:—

Dredge *No. 4* left Sorel May 6, was taken up to Varennes and laid out to deepen and widen Varennes curve to 35 feet at low water of 1897, the material being soft clay.

This dredge worked at Varennes curve until July 2, when she was taken down to Cap Charles channel, where she was operated until July 27, widening and deepening the channel to 30 feet at low water of 1897. The material excavated was shale rock, hard-pan and boulders.

On July 27, *No. 4* was moved to Cap à la Roche curve, having finished her cut in the Cap à la Roche curve to 30 feet at low water of 1897, was carried on until November 11. The material dredged was shale rock and hard-pan.

From the 18th to the 21st of September, inclusive, dredge *No. 4* was unable to work owing to a broken winch, which had to be sent to Sorel for repairs. Time was also lost, both at Cap Charles and Cap à la Roche curve owing to the fact that a great many stones and boulders had to be lifted with the stone lifter.

Dredge *No. 4* was moved up to Pointe aux Trembles channel (en haut) on November 11, and worked there deepening the channel to 35 feet at low water of 1897. The material dredged was clay. On November 26 she was brought down to Sorel to go into winter quarters.

The number of days during which this dredge was in operation was 170, and the percentage of time of actual work, 67.

The total number of cubic yards removed amounted to 233,123, at a cost of \$52,523.58, or $22\frac{53}{100}$ cents per cubic yard.

SESSIONAL PAPER No. 21

Elevator Dredge 'Lafontaine' (No. 5).

This dredge was constructed at the Sorel shipyard, and was completed in 1901. Her hull is of wood. She is fitted out with cast steel buckets, and has breasting winches of a new type, using wire rope instead of chains for side moorings.

During the winter of 1911-12 the dredge was given an overhauling, and the necessary repairs made to put her in working order for the next season.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge No. 5 was brought up from Sorel on May 6 to Varennes and laid out to deepen and widen Varennes curve to 35 feet at low water of 1897, the material being clay.

On June 8, this dredge was removed to Cap à la Roche curve, where she was set to work to deepen and widen the channel to 30 feet at low water of 1897, the material excavated being shale rock. From June 8 until November 4, No. 5 was employed at Cap à la Roche curve. Time was lost from August 19 to 22, inclusive, and also on August 27 and 28, making repairs to buckets.

Dredge No. 5 was taken up river on November 4, stopping one day at Sorel to undergo repairs, and was laid out at Varennes curve to continue deepening and widening, where operations were left off in June. Work was carried on there until November 26, when she was brought down to Sorel to go into winter quarters.

The working time of dredge was 170 days, the dredge being in actual operation 58 per cent of the full working time.

The total number of cubic yards removed amounted to 188,300, at a cost of \$63,180.95, or 33⁵⁵/₁₀₀ cents per cubic yard.

Elevator dredge 'Baldwin' (No. 6).

This dredge was constructed at the Sorel shipyard in 1902, the hull being of wood. No. 6 is provided with large built-up buckets for work in soft material, but with sufficient teeth to enable her to work in hard-pan, &c.

During the winter of 1911-12 the dredge was thoroughly overhauled and repaired.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge No. 6 left Sorel May 10 and was taken up to Repentigny, where she was laid out for work in the new steamboat channel, to dredge to a depth of 15 feet at low water of 1897, and 300 feet wide, the material being clay, sand and stones. Dredging operations were carried on here until September 19, when the upper stretch of the Repentigny channel was finished. This dredge lost time from June 21 to 25, inclusive, as it was necessary to take her to Sorel for repairs to the upper tumbler, and later on in September from the 9 to the 14, inclusive, repairs had to be made to the bucket frame.

On September 19, dredge No. 6 was brought down to Ste. Anne Traverse, but owing to a heavy gale of wind, it was not possible to lay her out there until September 23. On this date she was set to work to deepen the channel to 35 feet at low water of 1897, the material to be dredged being clay, and she continued working there until October 1.

No. 6 was brought down to Champlain channel on October 1, and worked there until October 23, cleaning up some small ridges of sand that had formed in the channel.

The sand having all been cleaned up in the Champlain channel, No. 6 was brought up to Sorel on October 23. She remained at Sorel October 24, as it was election day in Richelieu county, and October 25, as it was blowing too hard. On October 26, this dredge was taken up to the lower end of Repentigny channel, and

4 GEORGE V., A. 1914

laid out above Lavaltrie. She worked here dredging clay and stones, making a channel 300 feet wide with a depth of 15 feet at low water of 1897. On November 23 she was brought back to Sorel to go into winter quarters.

In a total of 166 days during which this dredge was at work, her machinery was in actual operation 62 per cent of the full working time.

The total number of cubic yards removed amounted to 440,000, at a cost of \$50,107.22 or 11³⁸/₁₀₀ cents per cubic yard.

Hydraulic Dredge 'J. Israel Tarte' (No. 7).

The hull of this dredge is of steel, of the same type and general design as the steel hulls of the elevator dredges. She was constructed in 1902 by the Polson Iron Works Company, of Toronto, Canada.

During the winter of 1911-12 the dredge was thoroughly overhauled and repaired. Her boilers were fitted with Howden's system of forced draught. All the 100-foot discharge pontoons were put into good repair.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge No. 7 was brought down from Sorel to Quebec May 10, and on May 11 was placed in dry-dock to have slight repairs made to the hull and to have the same scraped and painted. The dredge remained in dry-dock until May 16. On that date she was brought out, and taken up to the head of lake St. Peter, where she remained until May 21, getting everything in readiness for the season's work.

She was laid out on May 21 at the lower end of the course from No. 3 curve, lake St. Peter, to the White Buoy curve, and worked there deepening the channel to 35 feet at low water of 1897, the material dredged being stiff clay.

No. 7 was operated all season, until November 18, between No. 3 curve, lake St. Peter and the White Buoy curve, and completed 4.52 miles of channel. On November 18 she was taken up to Sorel to go into winter quarters.

Dredge No. 7 was greatly delayed during the season owing to wind. During stormy weather the connections of her 2,500-foot discharge pipe are often broken. The time lost is not only the actual duration of the storm, but there is also the time required to repair the pipes after the wind has moderated.

Low steam pressure was another serious cause of delay. This was due to the fact that the coal was often bad, that good stokers could not be obtained, and that sometimes the dredge had to be operated without a full complement of stokers. From October 16 to 19, inclusive, the dredge was idle owing to a broken crank shaft.

In a total of 154 days during which this dredge was at work, her machinery was in actual operation 48 per cent of the full working time.

The total number of cubic yards amounted to 2,624,212, at a cost of \$102,438.80 or 3⁹⁰/₁₀₀ cents per cubic yard.

Hopper-Hydraulic Dredge 'Beaujeu' (No. 8).

Steel hull, twin screw. This dredge was constructed at the Sorel shipyard, and completed in 1907.

During the winter of 1911-12, No. 8 had the usual general repairs. New arrangements were also made for discharging dredged material, consisting in the installation of two main pipes distributing material into three chutes on each side, which discharge overboard. This new system will enable the dredge to discharge material into her own hoppers or into a hopper-barge or scow alongside the dredge.

The details of the operations during the season commencing April 1, 1912, were as follows:—

Dredge No. 8 left Sorel May 14, and arrived in Quebec the same evening. She remained at Quebec May 15, as it was election day in the province of Quebec, and

SESSIONAL PAPER No. 21

also May 16 to take coal, proceeding down to her station at the West Sand in the north channel below Quebec on May 17. Here dredging operations were carried on until July 2.

The work being done on the north side is the dredging of a channel 1,000 feet wide, to 35 feet at extreme low water spring tides. The material to be dredged is clay, sand, gravel and stones.

On July 2, *No. 8* was taken over to the south channel at Crane island, where two small lumps were cleaned up, that had been left over from the previous season. She returned to the north channel on July 4 and recommenced operations there.

From May 17 until July 11 this dredge was operated only between the hours of daylight to dark. On July 12, the crew was slightly increased, and for the remainder of the season the dredge was worked 24 hours per day.

No. 8 worked at West Sand from July 4 until August 13, when she was taken over to St. Thomas channel on the south side. Here two small lumps, not finished the year before, were cleaned up. She arrived back at the north channel on August 14.

For the remainder of the season from August 14 until November 26 (dredge *No. 8* was steadily employed at West Sand in the north channel. She left there November 26, arriving at Sorel the following day, November 27, and went into winter quarters.

A number of breakages occurred which occasioned considerable delay to this dredge.

On June 13 and 14, the dredge was at Quebec having repairs made to her dumping doors. From August 1 to 10, inclusive, *No. 8* was at anchor at St. Patrick's hole. During this time the turbine shaft was repaired and refitted, and a new bush was put into the cutter head. Owing to the fact that the dredge was allowed to touch bottom with her dumping doors down, several of these doors were injured. To rectify this it was necessary to dock the vessel. She went into dry-dock, September 26, and remained there until October 3. While in dock, the doors were repaired, the tail shaft taken out and rebushed, a new turbine and shaft were put in, and the hull was scraped and painted up to the water line. After the return of *No. 8* to the north channel from the dry-dock, it was found that the turbine shaft had been improperly fitted and the dredge had to return to Quebec, where she remained from October 5 to 7 inclusive, making the necessary repairs.

In a total of 153 days, during which this dredge was at work, her machinery was in actual operation 73 per cent of the full working time.

The total number of cubic yards removed was 1,459,850, at a cost of \$71,195.50 or 4⁸⁷/₁₀₀ cents per cubic yard.

Suction Hopper dredge 'Galveston' (No. 9).

Steel hull, twin screw. During the winter of 1911-12 the *Galveston* had the usual repairs to her hull and machinery. A new 4-inch ash ejector was also installed on board.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge *No. 9* left Sorel May 9, arriving at St. Michel May 10, where she was beached to make certain necessary repairs to her hull and tail shafts, which could only be done when the ship was dry. By May 19 these repairs were completed, and after taking coal the dredge proceeded to the north channel, arriving there May 20. She was immediately laid out for work at the West Sand to dredge a channel 1,000 feet wide with 35 feet depth at low water of spring tides. The material to be dredged is clay, sand, gravel and stones.

This dredge was employed for the whole season in the north channel.

4 GEORGE V., A. 1914

On November 23, dredge *No. 9* was beached at St. Michel to close up her intake port for the season. She remained at St. Michel for two days, and then proceeded to Sorel, arriving there November 27 to go into winter quarters.

No. 9 lost time through breakages, and the making of the necessary repairs that these accidents involved.

From May 22 to 24, inclusive, this dredge was unable to work, as the lifting connections of the forward end of the intake pipe was broken. On July 17 the slide straps at the inner end of the intake pipe became displaced, and it was impossible to lower the pipe. The dredge was beached at St. Michel, and remained there July 18, 19 and 20 making the necessary repairs. No breakages of any consequence occurred from July 20 until September 9, when the dredge had to be sent to Quebec to have the boilers and turbines repaired. She remained there from September 9 until September 14, inclusive. On the latter date work was recommenced in the north channel, but unfortunately it was necessary to bring the dredge back to Quebec for September 23 and 24 to repair one of the low-pressure cylinders, which was cracked, and for additional work on the boilers. The hopper doors were not in good condition, and a great deal of material was lost owing to the fact that they were not sand tight. It was decided to put the dredge into dry-dock. She went into dock on October 29 and remained there until November 2. The old doors were repaired as well as possible, measurements taken so as to be able to have new ones made, and the hull of the dredge was scraped up to the water line.

The working time of dredge *No. 9* was $151\frac{1}{2}$ days. She was in actual operation 78 per cent of the full working time.

The total number of cubic yards removed amounted to 721,200 cubic yards, at a cost of \$59,879.74 or $8\frac{30}{100}$ cents per cubic yard.

Dipper Dredge No. 10.

Steel hull. This dredge was constructed at the Sorel shipyard, and completed in 1910.

During the winter of 1911-12 all necessary repairs were made to dredge *No. 10*, which had wintered in Montreal harbour.

The details of the operations of this dredge for the fiscal year commencing April 1, 1912, were as follows:—

Dredge *No. 10* was laid up during the winter of 1911-12 in Montreal. On April 30 the work of getting her ready for the season's operations began, and on May 10 she was laid out to work on the channel approach to the floating dock, Montreal harbour, where it had left off the previous season, excavating a channel 750 feet wide with a depth of 35 feet at low water of 1897. This dredge was employed on the approach to the floating dock for the whole season, and on November 28, was taken into winter quarters at Sorel.

From May 10 until September 3, dredge *No. 10* worked for 10 hours a day, but from the latter date until the end of the season, she worked two shifts of 10 hours each, making 20 hours per day, or 120 hours per week.

This dredge lost a great deal of time owing to breakages, and also owing to the fact that much of the material excavated was loaded on flat scows to be later used for filling behind cribs, etc., at the floating dock basin. The unloading of these scows occasioned considerable delay. Time was lost owing to broken buckets on July 16, 17, 22, 23, and 24, and September 10 and 11; also for renewing or repairing wires, August 23 and 24, and September 23 and 24.

The working time of dredge *No. 10* was 66 days, the dredge being in actual operation 53 per cent of the full working time.

The total number of cubic yards removed amounted to 374,700, at a cost of \$48,170.21, or $12\frac{85}{100}$ cents per cubic yard.

SESSIONAL PAPER No. 21

Dipper Dredge No. 11.

Steel hull. This dredge was constructed at Sorel shipyard, and was completed in 1911.

During the winter of 1911-12 *No. 11* received the ordinary repairs to her hull and machinery.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge No. 11 left Sorel on May 2 and was taken up to Montreal, arriving there the same day. From May 3 until May 13 the crew was employed on board putting in the spuds, wires, &c., and otherwise getting ready for the season's work.

On May 13 this dredge was laid out at the floating dock approach to dredge a channel to 30 feet at low water of 1897, the material being hard-pan and stones. She continued working there until June 11.

No. 11 was moved into the floating dock basin on June 12 and set to work dredging to 50 feet at low water of 1897, the material being hard-pan and sand. Work was carried on in the basin until October 25.

The dredge was then moved back to the floating dock approach, and remained there excavating hard-pan and stones, until November 21, when she was moved up to the Tarte pier, Maisonneuve, and dismantled. On November 27 she was brought down to Sorel and went into winter quarters.

Dredge No. 11 lost a great deal of time from breakages of one kind or another, and owing to the fact that part of the material excavated was dumped on flat scows, to be used for filling in connection with the floating dock works, delay was caused waiting for the return of these scows, which could not be emptied by the derricks quick enough.

From June 29 to July 31, inclusive, this dredge was unable to work owing to her bucket having been broken, and again from August 6 to 10, inclusive, for the same reason. From August 27 to 30, inclusive, the dredge was out of commission owing to breakages, and from October 17 to 19, owing to the turntable being damaged.

This dredge worked 10 hours per day from May 13 until June 10. On the latter date the night crew was placed on board, and the working hours were changed to two shifts of 10 hours each, or 20 hours per day.

The working time of dredge *No. 11* was 164 days, the dredge being in actual operation 50 per cent of the full working time.

The total number of cubic yards removed amounted to 332,625, at a cost of \$45,513.33 or 13⁶/₁₀₀ cents per cubic yard.

Elevator Dredge No. 12.

This dredge was constructed at the Sorel shipyard, and was completed in 1912. Her hull is of steel. *No. 12* is fitted out with large cast steel buckets for rock work, and can dig to the depth of 52 feet. The breasting winches are similar to those on elevator dredge *No. 5*, using wire cables instead of chains.

The details of the operations of this dredge for the fiscal year beginning April 1, 1912, were as follows:—

Dredge No. 12 was first set to work near Sorel at Ste. Anne Traverse on September 30. She was laid out there to be near the shops, so that the many little adjustments that are always necessary to the machinery of a new dredge could be easily made. The work to be performed was the deepening of the channel to 35 feet at low water of 1897, the material being clay.

Dredging operations were carried on by this dredge from September 30 until November 28 when she was brought to Sorel to go into winter quarters.

A good many alterations and adjustments had to be made to the machinery, and this occasioned considerable delay.

The working time of dredge *No. 12* was 50 days, the dredge being in actual operation 37 per cent of the full working time.

The total number of cubic yards removed amounted to 96,250, at a cost of \$31,117.42 or 32³²/₁₀₀ cents per cubic yard.

The total number of cubic yards removed by the dredging fleet in the ship channel between Montreal and Quebec, during the fiscal year ending March 31, 1913, amounted to 4,748,294, at a total cost of \$532,154.50, or 11²⁰/₁₀₀ cents per cubic yard.

The total number of cubic yards removed by the *Beaujeu* (*No. 8*) and the *Galveston* (*No. 9*) below Quebec during the fiscal year ending March 31, 1913, amounted to 2,181,050, at a total cost of \$131,075.24, or 6 cents per cubic yard.

The total number of cubic yards removed by the whole of the dredging fleet during the season amounted to 6,929,344, at a total cost of \$663,229.74, or 9⁵⁷/₁₀₀ cents per cubic yard.

30 FOOT PROJECT.

PROGRESS of dredging operations at date of writing, the close of the season, 1912.

Locality.	Distance English miles.	Total length requiring dredging.	Length dredged in 1912.	Total length of 30 foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1— Montreal to Sorel.....	45	22·90	.....	22·90	All completed.
Division 2— Sorel to Batiscan.....	36	12·45	.....	12·45	All completed.
Division 3— Lake St. Peter.....	20	18·00	.....	*0·20 †17·80	
Division 4— Batiscan to Quebec.....	59	10·00	0·55	7·80	2·20
Division 5— Quebec to The Traverse.....	60	6·65	.....	4·65	2·00
Total	220	70·00	0·55	65·80	4·20

*Not widened. †Widened.

SESSIONAL PAPER No. 21

PROGRESS of dredging operations at date of writing, the close of the season, 1912.

Locality.	Length of Dredging.		Cubic yards yet required to be done.
	Required.	Done.	
	Miles.	Miles.	
Division 1—			
Longueuil shoal.....		1 10	
Longue point to Pointe aux Trembles (E.H.).....		5 05	
Ile Ste. Thérèse.....		0 40	
Varennés to Cap. St. Michel.....		3 00	
Cap St. Michel to Verchères.....		4 50	
Verchères Traverse.....		1 10	
Verchères to Contrecoeur.....		1 70	
Contrecoeur channel.....		6 05	
Total....		22 90	
Division 2—			
Sorel to Ile de Grace.....		4 40	
Stone island.....		1 10	
Ile aux Raisins.....		0 25	
Lake St. Peter (see Div. 3).....			
Port St. Francis.....		0 50	
Three Rivers.....		0 50	
Cap Madaleine to Becancour.....		1 55	
Becancour to Champlain		2 25	
Champlain to Pointe Citrouille.....		1 30	
Batture Perron.....		0 60	
Total.....		12 45	
Division 3—			
Lake St. Peter.....		*0 20	200,000
		†17 80	
Total.....		18 00	200,000
Division 4—			
Batiscan to Cap Levrard.....		3 00	
Cap à la Roche channel.....	0 30	1 70	200,000
Pouillier Rayer.....		1 20	
Cap Charles.....	0 20	0 70	50,000
Grondines.....	0 50	0 30	170,000
Lotbinière.....		0 40	
Cap Santé.....		0 20	
Ste. Croix.....	0 60	0 30	150,000
St. Augustin.....	0 60		300,000
Total.....	2 20	7 80	870,000
Division 5—			
Quebec to the Traverse.....	2 00	4 65	550,000
Total.....	2 00	4 65	550,000
Totals.....	4 20	65 80	1,620,000
Cubic yards yet to be done.....			1,620,000
Cubic yards done.....			72,967,537
Total.....			74,587,537

* Not widened.

† Widened.

4 GEORGE V., A. 1914

35 FOOT PROJECT.

PROGRESS of Dredging Operations at date of writing, the close of the season, 1912.

Locality.	Distance English Miles.	Total length requiring dredging.	Length dredged in 1912.	Total length of 35 foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1— Montreal to Sorel.....	15	28·63	0·44	1·14	27·49
Division 2— Sorel to Batiscan	36	19·75	0·10	0·60	19·15
Division 3— Lake St. Peter.....	20	18·32	4·52	10·18	8·14
Division 4— Batiscan to Quebec.....	59	15·54	.....	.....	15·54
Division 5— Quebec to GooseCape (North Channel)	66	8·14	.....	0·50	7·64
Total	226	90·38	5·06	12·42	77·96

SESSIONAL PAPER No. 21

PROGRESS of Dredging Operations at date of writing, the close of the season of 1912.

Locality.	Length of Dredging in Miles.		Cubic yards yet to be Dredged.	Cubic yards Dredged.
	Yet to be done.	Done.		
Division I.—				
Longueuil shoal	1·88	.....	573,259	.....
Longue Pointe traverse.....	0·47	.....	426,222	.....
Longue Pointe curve.....	1·32	.....	657,546	.....
Pointe aux Trembles channel.....	3·70	0·24	2,292,032	111,400
Ile Ste. Thérèse channel ..	1·12	.....	275,100	.....
Varennnes curve.....	1·68	0·90	899,977	1,476,600
Cap St. Michel curve.....	0·56	.....	385,000	.....
Cap St. Michel to Verchères.....	4·72	.....	2,273,832	.....
Verchères Traverse.....	1·24	.....	452,241	.....
Verchères to Contrecoeur	1·91	.....	857,837	.....
Contrecoeur channel.	8·28	.....	5,221,481	.....
Lanoraie to Sorel.....	0·61	.....	119,466	.....
Totals, Division I.....	27·49	1·14	14,435,993	1,588,000
Division II.—				
Sorel to Ile de Grace.....	4·38	0·60	2,490,066	430,650
Stone island	2·11	.....	941,015	.....
Ile aux Raisins	2·09	.....	910,000	.....
Port St. Francis.....	1·00	.....	632,981	.....
Three Rivers.....	0·72	.....	410,147	.....
Cap Madeleine to Becancourt.....	2·40	.....	979,118	.....
Becancourt to Champlain.....	1·16	.....	717,560	.....
Champlain to Pointe Citrouille.	4·06	.....	1,706,759	.....
Batture Perron.....	1·23	.....	456,000	.....
Totals, Division II	19·15	0·60	9,243,580	430,650
Division III.—				
Lake St. Peter	8·14	10·18	4,709,948	6,056,106
Division IV.—				
Batiscan to Cap Levrard.....	4·48	.....	2,386,168	.....
Cap Levrard Channel.	1·27	.....	781,666	.....
Cap à la Roche curve	2·06	.....	1,836,859	.....
Cap Charles channel.....	2·04	.....	1,077,416	.....
Grondines.....	0·83	.....	513,332	.....
Lotbinière.....	0·47	.....	321,480	.....
Cap Santé.....	1·51	.....	655,561	.....
Ste. Croix	1·47	.....	798,518	.....
St. Augustin	1·41	.....	826,207	.....
Totals, Division IV.....	15·54	.....	9,321,650	.....
Division V.—				
Quebec to Goose Cape (north channel)—				
Madame Reef shoal.....	2·84	.....	2,585,132	.....
West Sand and East Narrows shoals.....	4·80	0·50	10,672,841	2,895,200
Totals, Division V.	7·64	0·50	13,257,973	2,895,200
Totals.....	77·96	12·42	50,969,144	10,969,956

Abstract of Work of Dredging Fleet during Fiscal Year ended March 31, 1913.

Dredge.	Locality of Dredging.	Time of service. Days.	Nominal work hours, 24 per day. Hours.	Hours actual dredging.	Number of scows filled.	Number of cubic yards dredged (scow measurement.)	Depth of dredging at low water.	Width in feet.	Character of Soil.	Remarks.
							Ft. In.	Feet.		
<i>Laval</i> (No. 1)	Montreal harbour	162	3,564	2,443½	311	71,200	30 0	600	Stones and gravel	Captain J. Robidoux.
	Varennes curve	63	1,452	760½	641	118,150	35 0	550 to 600	Clay	Captain R. Matte.
	Cap Charles channel ..	102	2,232	1,364½	333	68,260	30 0	450	Shale rock, hard pan and boulders.	
<i>Lady Aberdeen</i> (No. 3) ..		165	3,684	2,125½	974	186,410				
	Varennes curve	28	624	468	263	60,600	35 0	550 to 600	Clay	Captain P. Cardin.
	Grondines ..	76	1,668	1,251½	247	52,674	30 0	450	Clay and embedded boulders.	
<i>Lady Minto</i> (No. 4)	Cap Charles curve	47	1,032	663½	284	56,800	30 0	450	Shale rock.	Capt. B. Ladebauche.
	Ste. Anne traverse	21	468	229½	181	31,400	35 0	450	Clay.	
		172	3,792	2,613	975	201,474				
<i>Lafontaine</i> (No. 5)	Varennes curve	45	996	770	595	119,000	35 0	550 to 600	Clay	Captain A. Marcotte.
	Cap Charles channel ..	23	504	312½	126	24,000	30 0	450	Shale rock, hard pan and boulders.	
	Cap à la Roche curve..	88	1,932	1,287½	378	76,123	30 0	450 to 550	Shale rock and hard pan	Captain A. Marcotte.
	Point aux Trembles channel.	14	312	151½	70	14,000	35 0	450	Clay.	
<i>Lafontaine</i> (No. 5)		170	3,744	2,522½	1,163	233,123				
	Varennes curve ..	47	1,044	610	314	64,800	35 0	550 to 600	Clay	Captain A. Marcotte.
	Cap à la Roche curve..	123	2,700	1,545	629	123,500	30 0	450 to 550	Shale rock.	
<i>Lafontaine</i> (No. 5)		170	3,744	2,155	943	188,300				

SESSIONAL PAPER No. 21

<i>Baldwin</i> (No. 6) . . .	Repentigny channel . . . Ste. Anne traverse . . . Champlain channel . . .	138 9 19	3,036 192 420	1,959 $\frac{3}{4}$ 98 205 $\frac{1}{2}$	1,476 49 136	399,200 13,600 27,200	15 35 30	0 0 0	300 450 450	Clay, sand and stones. Clay. Sand (cleaning up).	Captain A. Morin.
<i>J. Israel Tarte</i> (No. 7).	Lake St. Peter (No. 3 curve to W.B. curve)	154	3,384	1,626 $\frac{1}{2}$	1,661	2,624,212	35	0	450	Stiff clay.	Captain J. S. Michaud.
<i>Beaujeu</i> (No. 8) . . .	North channel, West Sand St. Thomas channel . . .	150 $\frac{1}{2}$ 2 $\frac{1}{2}$	2,984 51	2,154 $\frac{1}{2}$ 51	887 3	1,457,750 2,100	35 30	0 0	1,000 1,000	Sand, gravel and stones Clay and stones.	Captain A. Bourget.
<i>Halveston</i> (No. 9)	North channel, West Sand	153	3,035	2,205 $\frac{1}{2}$	890	1,459,850					
<i>Dipper Dredge</i> (No. 10)	Floating dock appr'ch.	166	2,360	1,244	1,573	374,700	30	0	500 to 750	Hard pan and stones.	Captain J. Côténoir.
<i>Dipper Dredge</i> (No. 11)	Floating dock appr'ch. Floating dock basin . . .	51 113	760 1,920	362 983 $\frac{1}{2}$	389 885	104,900 227,725	30 50	0 0	500 to 750	Hard pan and stones. Hard pan and sand.	Captain R. Bellerose.
<i>Elevator Dredge</i> (No. 12)	Ste. Anne traverse . . .	50	930	345	275	96,250	35	0	450	Clay.	Captain Alexis Morin.
						6,929,344					

SESSIONAL PAPER No. 21

Stone-lifter No. 3 { Divided	116 25	1,604 97	383 42	630 95	1,159 14			266 40	4,161 13				
Stone-lifter No. 4 { equally	302 50	1,508 07	431 07	1,339 81	2,286 48			401 37	6,269 30				
Rock-cutter No. 1 { between	1,791 75	4,057 19	1,489 65	1,605 80	1,204 71			694 20	10,843 30				
Floating shop.... { dredges.	21 25	906 71	372 10	326 60	295 74			131 49	2,053 89				
Construction for Dredging													
Fleet—													
Tug <i>Jessie Hume</i> . new													
boiler.....						4,362 73							
Stone-lifter No. 4, lifting													
arrangement.....						407 00							
Dredge No. 8, new dis-													
charge pipe.....						3,285 23							
One 20-ton Lobnitz rock-													
cutter machinery						500 00							
Constructions 48 50						990 78							
Improvements to Sorel ship-													9,545 74
yard—													
Boiler shop, new tools and													
machinery.....						3,855 35							
Machine shop, new tools													
and machinery.....						283 64							
Mould loft, alteration ...						224 71							
Building No. 1 alteration						274 72							
" No. 5 "						96 48							
" No. 6 "						444 40							
" No. 9 "						483 41							
" No. 18 "						789 59							
" No. 28 "						139 59							
Water-works						868 14							
Gasoline launch for the													
yard. . .						44 81							
New sheer legs.....						40,736 39							
Alterations <i>re</i> Royal Com-													
mission Report.						14,040 60							62,281 83
	151,190 12	176,585 15	59,091 64	61,599 81	172,292 69	71,827 57	42,470 33	663,229 74	152,586 74	29,083 13	663,229 74	735,057 31	

DETAILS of Dredges, Locality and Cost per Cubic Yard.

Dredges.	Total cost of operations of each dredge during Fiscal Year.	Number of days in operation each dredge.	Cost per day, operations of dredges and plants.	Days working, each locality.	Cost of work, each locality.	Total cost of operations of each dredge.	Number of cubic yards dredged in each locality.	Total cubic yards for each dredge.	Cost per cubic yard, each locality.	Average cost per cubic yard dredge.	Kind of material dredged.	Locality of dredging.
	\$ cts.		\$ cts.		\$ cts.	\$ cts.			Cts.	Cts.		
<i>Laral</i> (No. 1).....	50,314 89	162	301 58	162	50,314 89	50,314 89	71,200	71,200	70 ⁶⁶ / ₁₀₀	70 ⁶⁶ / ₁₀₀	Stones and gravel.....	Montreal harbour (ship channel.)
<i>Laurier</i> (No. 2).....	45,975 76	165	278 64	63 102	17,554 38 28,421 38	45,975 76	118,150 68,260	186,410	14 ⁸⁵ / ₁₀₀ 41 ¹⁰⁰ / ₁₀₀	24 ⁶⁶ / ₁₀₀	Clay..... Shale rock, hard pan....	Varennes curve. Cap Charles channel.
<i>Lady Aberdeen</i> (No. 3)	42,812 34	172	248 91	28 76	6,969 46 18,917 09	45,975 76	60,600 52,674	186,410	10 ⁵⁰ / ₁₀₀ 35 ⁹¹ / ₁₀₀	24 ⁶⁶ / ₁₀₀	Clay..... Clay and embedded boulders.	Varennes curve. Grondines.
<i>Lady Minto</i> (No. 4)...	52,523 58	170	308 96	47 21 45 23	11,698 70 5,227 09 13,903 30 7,106 13	42,812 34	56,800 31,400	201,474	20 ⁵⁹ / ₁₀₀ 16 ⁶⁴ / ₁₀₀	21 ²⁴ / ₁₀₀	Shale rock..... Clay.....	Cap Charles curve. St. Anne traverse.
<i>Lafontaine</i> (No. 5)....	63,180 95	170	371 65	88 14 47 123	27,188 68 4,325 47 17,467 67 45,713 28	52,523 58	76,123 14,000	233,123	35 ⁷¹ / ₁₀₀ 30 ⁸⁹ / ₁₀₀	22 ⁵³ / ₁₀₀	Shale rock and hard pan. Clay.....	Cap à la Roche curve. Pte aux Trembles channel.
<i>Baldwin</i> (No. 6).....	50,107 22	166	301 85	138	41,655 40	63,180 95	64,800 123,600	188,300	26 ⁹⁵ / ₁₀₀ 37 ⁹¹ / ₁₀₀	33 ⁵⁵ / ₁₀₀	Clay..... Shale rock.....	Varennes curve. Cap à la Roche curve.
<i>J. Israel Tarte</i> (No. 7)	102,438 80	154	665 18	19	2,716 65 5,735 17	102,438 80	13,600 27,200	440,000	19 ⁹⁷ / ₁₀₀ 21 ⁰⁸ / ₁₀₀	11 ³⁸ / ₁₀₀	Clay, sand and stone....	Repentigny channel, (north channel).
<i>Beaujeu</i> (No. 8).....	71,195 50	153	465 33	150 ¹ / ₂	70,032 18 1,163 32	102,438 80	1,457,750 2,100	2,624,212	4 ⁸⁰ / ₁₀₀ 55 ³⁹ / ₁₀₀	3 ⁹⁰ / ₁₀₀	Stiff Clay.....	Lake St. Peter curve No. 3 to White Buoy.
<i>Galveston</i> (No. 9).....	59,879 74	151 ¹ / ₂	395 24	151 ¹ / ₂	59,879 74	59,879 74	721,200	721,200	8 ³⁰ / ₁₀₀	8 ³⁰ / ₁₀₀	Sand, gravel and stones..	North Channel, West Sand St. Thomas channel.

SESSIONAL PAPER No. 21

<i>Dipper Dredge</i> (No. 10)	48,170 21	166	290 18	166	48,170 21	374,700	..... 374,700	..... 12 ^{8.5} ₁₀₀	Hard pan and stones.....	Floating dock approach (Montreal harbour.)
<i>Dipper Dredge</i> (No. 11)	45,513 33	164	277 52	51	14,153 54	104,900	..... 104,900	..... 13 ^{4.8} ₁₀₀	Hard pan and stones....	Floating dock approach.
<i>Elevator Dredge</i> (No. 12)	31,117 42	50	622 34	113	31,359 79	227,725	..... 227,725	..... 13 ^{7.7} ₁₀₀	Hard pan and sand.....	Floating dock basin (Mon- treal harbour.)
	663,229 74	1,843 ¹ ₂	....	50	31,117 42	96,250	..... 96,250	..... 32 ^{3.2} ₁₀₀	Clay.....	St. Anne traverse.
	663,229 74	1,843 ¹ ₂	....	1,843 ¹ ₂	663,229 74	6,929,344	..... 6,929,344	.....	

4 GEORGE V., A. 1914

DREDGING FLEET.

The following is a description of the dredging plant at the end of the season of 1912 owned and operated by the Department of Marine and Fisheries in connection with the River St. Lawrence Ship Channel between Montreal and Father Point:—

DREDGES.

The Elevator Dredge 'Laval' (No. 1).—Wooden hull; length over all, 150 feet; breadth of beam, 30 feet; depth of hold, 14 feet; average draught, 11 feet; greatest working depth, 42 feet; hull built in Ottawa in 1894; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge 'Laurier' (No. 2).—Wooden hull; length over all, 163 feet; breadth of beam, 32 feet; depth of hold, 14 feet; average draught, 10 feet; greatest working depth, 45 feet; built at Sorel shipyard in 1897; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge 'Lady Aberdeen' (No. 3).—Steel hull; length over all, 148 feet; breadth of beam, 32 feet; depth of hold, 13 feet; average draught, 8.5 feet; greatest working depth, 42.5 feet; built at Sorel shipyard in 1900; steel buckets; greatest working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge 'Lady Minto' (No. 4).—Steel hull; length over all, 148 feet; breadth of beam, 32 feet; depth of hold, 13 feet; average draught, 8.5 feet; greatest working depth, 42.5 feet; built at Sorel shipyard in 1900; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge 'Lafontaine' (No. 5).—Wooden hull; length over all, 168 feet; breadth of beam, 32 feet; depth of hold, 14 feet; average draught, 9 feet; greatest working depth, 45 feet; built at Sorel shipyard in 1901; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge 'Baldwin' (No. 6).—Wooden hull; length over all 165 feet; breadth of beam, 34 feet; depth of hold, 14 feet; average draught, 8 feet; greatest working depth, 42 feet; built at Sorel shipyard in 1902; one-cubic-yard buckets strengthened for fairly hard material; working capacity per day in medium material, 2,500 to 3,500 cubic yards.

The Hydraulic Dredge 'J. Israel Tarte' (No. 7).—Steel hull; length over all, 160 feet; breadth of beam, 42 feet; depth of hold, 12.5 feet; average draught, 6 feet; length of suction pipe, 80 feet; greatest working depth, 47 feet; built at Polson Iron Works, Toronto, 1902; working capacity per day in soft material, 12,000 to 20,000 cubic yards.

Discharge Pipe and pontoons of Dredge 'J. I. Tarte' (No. 7).—Twenty-seven lengths of pipe, 36 inches diameter by 100 feet long; one length of pipe 36 inches diameter by 35 feet long; twenty-seven pairs of pontoons for floating pipes, 42 inches diameter by 90 feet long.

Scow No. 24, Pontoon Anchor Scow for Dredge 'No. 7'.—Wooden hull; length over all, 63 feet; breadth of beam, 27 feet; depth of hold, 8 feet; built at Sorel shipyard in 1909.

Scow No. 27 for Dredge 'J. I. Tarte' (No. 7).—Wooden hull; length over all, 60 feet; breadth of beam, 18 feet; depth of hold, 6 feet; built at Sorel shipyard in 1902.

The Sea-going Suction Hopper Dredge 'Beaujeu' (No. 8).—Steel hull; twin screw; length between perpendiculars, 264 feet; breadth of beam, 45 feet; depth of hold, 20 feet; capacity of hoppers, 2,000 cubic yards in 45 minutes; greatest working depth, 65 feet; draught, when loaded, 15 feet; ordinary speed, 9 statute miles; built in Sorel shipyard in 1907.

SESSIONAL PAPER No. 21

The Suction Hopper Dredge 'Galveston' (No. 9).—Steel hull; twin screw; length over all, 233 feet; breadth of beam, 39 feet; depth of hold, 15.5 feet; draught, when loaded with 1,800 tons, 14 feet 9 inches aft, and 13 feet 1 inch forward; greatest working depth, 55 feet; built in Germany, 1904; two suction pumps, Dutch type, 8.5 feet outside diameter, working capacity, 1,350 cubic yards in 45 minutes; hopper capacity, 1,500 cubic yards.

The Dipper Dredge 'No. 10'.—Steel hull; length moulded, 132.5 feet; breadth moulded, 42 feet; depth at bow, 11.5 feet; depth at stern, 9.7 feet; length of spuds, 74 feet; bucket capacity, one 11-yard for soft material, one 9-yard for hard material; capable of dredging to 50 feet; built at Sorel shipyard in 1910.

The Dipper Dredge 'No. 11'.—Steel hull; length moulded, 132.5 feet; breadth moulded, 42 feet; depth at bow, 11.8 feet; depth at stern, 13.5 feet; length of spuds, 74 feet; bucket capacity, one 11-yard for soft material, one 9-yard for hard material; capable of dredging to 50 feet; built at Sorel shipyard in 1911.

The Elevator Dredge 'No. 12'.—Steel hull; length over all, 180 feet; breadth of beam, 40 feet; depth of hold, 12.8 feet; average draught, 9 feet; greatest working depth, 52 feet; built at Sorel shipyard in 1912; steel buckets; working capacity per day in hard material, 2,000 to 4,000 cubic yards.

TUGS.

The Ice-breaking and Emergency Tug 'Lady Grey.'—Steel hull; twin screw; length between perpendiculars, 172 feet; length over all, 183 feet 6 inches; breadth moulded, 32 feet; breadth extreme, 32 feet 3 inches; depth moulded, 18 feet; draught mean to bottom of flat plate keel (normal) 12 feet; draught when ice-breaking, about 13 feet; displacement in tons at 12 feet draught, 1,070; mean speed, at 12 feet draught, on 6 runs over measured mile base, 14 knots; built by Vickers Sons & Maxim, Ltd., Barrow-in-Furness, England, 1906.

The Tug 'Frontenac.'—Composite hull; twin screw; length over all, 113 feet; breadth of beam, 23 feet; depth of hold, 10 feet; average draught, 9 feet; built at Sorel shipyard in 1902.

The Tug 'De Levis.'—Wooden hull; twin screw; length over all, 104 feet; breadth of beam, 20 feet; depth of hold, 10 feet; average draught, 8 feet; built at Sorel shipyard, in 1902.

The Tug 'James Howden.'—Wooden hull; twin screw; length over all, 100 feet; breadth of beam, 21 feet; depth of hold, 10 feet; average draught, 7.5 feet; built at Sorel shipyard in 1903.

The Tug 'Iberville.'—Steel hull; single screw; length over all, 90 feet; breadth of beam, 18 feet; depth of hold, 12 feet; average draught, 10 feet; built at Sorel shipyard in 1897.

The Tug 'Lac St. Pierre.'—Wooden hull; twin screw; length over all, 100 feet; breadth of beam, 21 feet; depth of hold, 10 feet; average draught, 7.6 feet; built at Sorel shipyard in 1901.

The Tug 'Portneuf.'—Wooden hull; single screw; length over all, 85 feet; breadth of beam, 17.3 feet; depth of hold, 9.8 feet; average draught, 8 feet; built at Sorel shipyard in 1905.

The Tug 'Chambly.'—Wooden hull; single screw; length over all, 84 feet; breadth of beam, 18 feet; depth of hold, 9.5 feet; average draught, 9 feet; built at Sorel shipyard in 1893.

The Tug 'Emilia.'—Wooden hull; single screw; length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; built at Sorel shipyard in 1898.

4 GEORGE V., A. 1914

The Tug 'Lanoraie.'—Wooden hull; single screw; length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; built at Sorel shipyard in 1901.

The Tug 'Jessie Hume.'—Wooden hull; single screw; length over all, 72 feet; breadth of beam, 17.2 feet; depth of hold, 10 feet; average draught, 8.5 feet; built at St. Catherines, Ont., in 1876.

The Tug 'Lotbinière.'—Wooden hull; twin screw; length over all, 80 feet; breadth of beam, 23 feet; depth of hold, 8 feet; average draught, 7 feet; built at Sorel shipyard, 1903.

The Tug 'Carmelia.'—Wooden hull; single screw; length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; purchased in 1904.

The Tug 'Contrecoeur.'—Wooden hull; twin screw; length over all, 90 feet; breadth of beam, 22.7 feet; depth of hold, 9 feet; average draught, 7 feet; built at Sorel shipyard, 1910.

The Tug 'Vareñnes.'—Wooden hull; twin screw; length over all, 96 feet; breadth of beam, 22 feet; depth of hold, 9 feet; average draught, 7 feet; built at Sorel shipyard, 1911.

The Tug 'Laviolette.'—Steel hull; twin screw; length over all, 92 feet; breadth of beam, 22 feet; depth of hold, 9.3 feet; average draught, 7 feet; built at Sorel shipyard, 1912.

COAL BARGES, ETC.

Coal Barge 'No. 1.'—Wooden hull; length over all, 120 feet; breadth of beam, 24 feet; depth of hold, 10 feet; built at Sorel shipyard, 1898.

Coal Barge 'No. 2.'—Wooden hull; length over all, 125 feet; breadth of beam, 25 feet; depth of hold, 11 feet; built at Sorel shipyard, 1900.

Coal Barge 'No. 3.'—Wooden hull; length over all, 98 feet; breadth of beam, 28 feet; depth of hold, 12 feet; built at Sorel shipyard, 1902.

Coal Barge 'No. 4.'—Wooden hull; length over all, 98 feet; breadth of beam, 28 feet; depth of hold, 12 feet; built at Sorel shipyard, 1903.

Coal Barge 'No. 5.'—Steel hull; length over all, 127 feet; breadth of beam, 32 feet; depth of hold, 10 feet; built at Sorel shipyard, 1911.

Stone Lifter 'No. 3.'—Wooden hull; length over all, 108 feet; breadth of beam, 34 feet; depth of hold, 14 feet; built at Sorel shipyard, 1903.

Stone Lifter 'No. 4.'—Steel hull; length over all, 100 feet; breadth of beam, 32 feet; depth of hold, 12 feet; built at Sorel shipyard, 1910.

Rock Cutter 'No. 1.'—Steel hull; Length over all, 100 feet; breadth of beam, 36 feet; depth of hold, 9.3 feet; weight of ram, 20 tons; hull and machinery built by the Lobnitz & Co., Renfrew, Scotland, and re-erected at Sorel shipyard, 1912.

Sounding Scow 'No. 1.'—Wooden hull; length over all, 60 feet; breadth of beam, 25 feet; depth of hold, 6 feet; built at Sorel shipyard, 1898.

Sounding Scow 'No. 2.'—Wooden hull; length over all, 75 feet; breadth of beam, 38 feet; depth of hold, 5 feet; transferred from Prescott Agency, in 1909, re-modeled and improved at Sorel shipyard.

Lodging Scow.—Wooden hull length over all, 60 feet; breadth of beam, 18 feet; depth of hold, 7 feet; built at Sorel shipyard, 1908.

Floating Shop.—Wooden hull: length over all, 90.3 feet; breadth of beam, 25 feet; depth of hold, 9 feet; 1 forge, 1 scraper, 1 emery wheel, 1 drill, 1 lathe, 1 6-horse power Foss gasoline engine; living quarters for four men; built at Sorel shipyard, 1908.

SESSIONAL PAPER No. 21

Scow 'No. 28.'—Winch scow used for fleet in general; length over all, 60 feet; breadth of beam, 18 feet; depth of hold, 7 feet; built at Sorel shipyard, 1908.

Scow 'No. 21.'—Winch scow used for the fleet in general; length over all, 40 feet; breadth of beam, 20 feet; depth of hold, 6 feet; built at Sorel shipyard, 1908.

HOPPER DUMPING SCOWS WITH HYDRAULIC POWER FOR CLOSING GATES.

No. 1 and No. 2.—Wooden hulls; with hydraulic power for closing gates; length over all, 97 feet; breadth of beam, 24.5 feet; depth of hold, 9 feet; capacity, 200 cubic yards; built at Sorel shipyard, 1897.

No. 3 and No. 4.—Wooden hulls; with hydraulic power for closing gates; length over all, 90 feet; breadth of beam, 18 feet; depth of hold, 7 feet; capacity, 150 cubic yards; built at Sorel shipyard, 1898.

No. 5, No. 6, No. 7, and No. 8.—Wooden hulls; with hydraulic power for closing gates; length over all, 97 feet; breadth of beam, 24 feet; depth of hold, 9 feet; capacity, 200 cubic yards; built at Sorel shipyard in 1899 and 1901.

No. 9, No. 10, No. 11, No. 12 and No. 13.—Wooden hulls; with hydraulic power for closing gates; length over all, 98 feet; breadth of beam, 24 feet; depth of hold, 9.5 feet; capacity, 300 cubic yards; built at Sorel shipyard, two in 1901 and 3 in 1902.

No. 14 and No. 15.—Wooden hulls; with hydraulic power for closing gates; length over all, 97 feet; breadth of beam, 24.5 feet; depth of hold, 9 feet; capacity, 300 cubic yards; built at Sorel shipyard in 1904 and 1905.

No. 16 and No. 17.—Wooden hulls; with hydraulic power for closing gates; length over all, 93 feet; breadth of beam, 24.5 feet; depth of hold, 8 feet; capacity, 250 cubic yards; built at Sorel shipyards in 1909.

No. 18 and No. 19.—Wooden hulls; with hydraulic power for closing gates; length over all, 93 feet; breadth of beam, 24.5 feet; depth of hold, 8 feet; capacity, 250 cubic yards; built at Sorel shipyard in 1911.

Two Dumping Scows.—Wooden hulls; with hydraulic power for closing gates; length over all, 93 feet; breadth of beam, 26.5 feet; depth of hold, 8.5 feet; capacity, 250 cubic yards; built at Sorel shipyard in 1912.

Sand Scow.—Steel hull; with hydraulic power for closing gates; length over all, 106.5 feet; breadth of beam, 21 feet; depth of hold, 10 feet; capacity, 200 cubic yards; built at Sorel shipyard in 1912.

Derrick Scow.—Used at Sorel shipyard in connection with construction and repairs to dredging fleet; length over all, 40 feet; breadth of beam, 20 feet; depth of hold, 5 feet; equipped with a derrick of 5-tons lifting capacity.

GOVERNMENT SHIPYARD, SOREL.

DETAIL STATEMENT of Expenditure on account of River St. Lawrence Ship Channel for the Fiscal Year ending March 31, 1913,

	Fuel.		Wages.		Board.		Supplies.		Maintenance and Repairs.		Proportion of General Expenditure.		Total for each Vessel.		Grand Total.	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
<i>Operating Expenses of Dredging Fleet—River St. Lawrence Ship Channel.</i>																
Dredge No. 1.....	3,785	59	8,313	69	2,719	49	2,080	93	9,560	51	1,946	68	30,406	89		
Tug <i>Farcaus</i>	3,428	17	4,593	00	1,782	98	865	51	2,369	99	891	91	13,931	56		
Dredge No. 2.....	5,351	97	8,406	50	2,823	56	2,700	27	7,357	34	1,828	75	28,468	39		
Tug <i>Chamblay</i>	2,585	49	4,277	61	1,672	12	728	82	1,528	67	738	22	11,530	93		
Dredge No. 3.....	5,658	48	8,313	13	2,793	84	2,720	47	5,099	66	1,681	65	26,267	23		
Tug <i>Enilia</i>	2,431	74	4,033	03	1,526	97	746	76	1,153	55	676	62	10,568	67		
Dredge No. 4.....	5,448	98	8,767	52	2,826	09	4,861	62	9,492	01	2,147	50	33,543	72		
Tug <i>Iberville</i>	2,879	24	4,394	42	1,715	69	1,094	21	2,087	37	832	49	13,003	42		
Dredge No. 5.....	10,505	48	8,836	44	2,729	74	4,799	10	12,309	44	2,679	93	41,860	13		
Tug <i>Lac St. Pierre</i>	4,501	49	4,613	38	1,860	31	1,133	63	2,253	21	982	36	15,344	38		
Dredge No. 6.....	6,587	48	8,313	81	2,724	64	5,143	88	9,752	83	2,224	55	34,747	19		
Tug <i>Lanoraie</i>	2,121	74	3,847	65	1,464	64	848	70	500	12	600	75	9,383	60		
Dredge No. 7.....	25,931	57	15,685	20	4,748	29	6,351	59	20,094	12	4,984	03	77,794	80		
Tug <i>Lotbinière</i>	3,137	63	4,933	72	1,865	96	1,196	64	2,678	20	944	75	14,756	90		
Tug <i>Carnelia</i>	1,809	13	2,323	18	796	34	607	52	1,243	29	463	72	7,243	18		
Dredge No. 8.....	14,416	09	13,542	44	4,217	89	3,393	96	20,235	81	3,817	14	59,623	33		
Dredge No. 9.....	13,679	34	12,286	17	3,824	16	2,155	78	13,269	41	3,092	70	48,307	56		
Tug <i>James Howden</i>	2,495	76	5,379	13	1,754	11	626	54	6,457	78	1,143	19	17,856	51		
Dredge No. 10.....	6,676	09	7,251	00	2,185	46	2,155	76	10,643	46	1,977	57	30,889	34		
Tug <i>Contrecoeur</i>	3,975	67	4,692	29	1,803	94	1,043	81	2,184	17	937	07	14,636	95		
Dredge No. 11.....	6,069	10	7,571	39	2,172	02	3,765	44	10,249	32	2,038	82	31,846	09		
Tug <i>Portneuf</i>	2,443	17	3,984	08	1,488	10	964	60	1,437	64	705	72	11,023	31		
Dredge No. 12.....	3,014	48	3,086	02	937	50	3,622	68	2,890	03	926	87	14,477	58		
Tug <i>Laviolette</i>	3,116	74	3,050	85	1,123	90	1,635	10	3,528	79	851	95	13,307	33		
<i>Fleet Generally.</i>																
Str. <i>De Levis</i>	3,391	25	5,718	77	2,126	84	1,818	49	4,783	46	1,220	17	19,058	98		
Tug <i>Jessie Hume</i>	1,516	50	2,293	79	750	82	631	84	4,186	44	641	76	10,021	15		
Floating Shop.....	21	25	906	71	372	10	326	60	295	74	131	49	2,053	89		
Stone Lifter No. 3.....	116	25	1,604	97	383	42	630	95	1,159	14	266	40	4,161	13		
" " No. 4.....	302	50	1,508	07	431	07	1,239	81	2,286	48	401	37	6,269	30		
Rock Cutter No. 1.....	1,791	75	4,057	19	1,489	65	1,605	80	1,205	71	694	20	10,843	30	663,229	74

APPENDIX No. 4.

SOREL SHIPYARD.

SOREL, June 23, 1913.

A. JOHNSTON, Esq.,
Deputy Minister, Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the following report on work performed at the Sorel shipyard during the fiscal year 1912-13.

At the beginning of the fiscal year, all the vessels of the Ship Channel dredging fleet were at Sorel, completing repairs and equipment, and getting ready for the season's operations.

The following dredges and auxiliary vessels formed part of this fleet:—

Elevator dredges, Nos. 1, 2, 3, 4, 5, 6 and 12.

One suction dredge, No. 7 (*J. I. Tarte*), with cutter head and discharge pipes.

One suction dredge, No. 8 (*Beaujeu*) with cutter head, carrying her own load, and self-propelling.

One suction dredge, No. 9 (*Galveston*) self-propelling.

Two large steel dipper dredges, Nos. 10 and 11 (8 and 11, cubic yard buckets).

One rock cutter, steel hull.

C.G.S.: *Frontenac, De Levis, James Howden.*

Tugs: *Lac St. Pierre, Lotbinière, Contrecoeur, Varennes, Laviolette, Iberville, Chambly, Emilia, Lanoraie, Portneuf, Jessie Hume, Carmelia.*

Coal barges, Nos. 1 to 5; one floating shop; 26 dumping scows; one rock cutter; three stone lifters; and several other boats of minor importance.

Besides the above-mentioned, the following vessels also wintered at the Sorel shipyard, and were overhauled, outfitted and made ready for the season's work:—

The steamers *Alpha, Hosanna, Verchères*, and steam barge *Shamrock*.

REPAIRS TO VESSELS OF THE ST. LAWRENCE SHIP CHANNEL FLEET.

Dredges.

Dredge No. 1.—Summer repairs: This dredge had general operating repairs. Capstan engine and a broken cylinder were also repaired. The crank shaft of bow-breasting winch was renewed; also eleven boiler tubes. Eighty worn-out teeth had to be replaced on buckets, and repairs made on two friction bands of breasting winches.

Winter repairs:—Hull repairs were made to side of well. A new steel frame was installed and the deck-houses repaired. Machinery, engine and boilers—A new piston rod for chute winch and two new cross head-pins for after winch, and two eccentric bands to forward winch were supplied. One new bottom to chute was made. Boilers tubes for both boilers were renewed. A new funnel was installed and the starboard boiler caulked. All buckets were sent ashore to be repaired, and the bushes, pins and teeth renewed.

Dredge No. 2.—Summer repairs:—About 40 bucket teeth of this dredge were renewed during the season. One intermediate shaft on bow-breasting winch replaced, the searchlight and three friction bands on winches put in good order. Men were sent on board during the season to caulk and repair the chute.

SESSIONAL PAPER No. 21

Winter repairs:—Hull had repairs to gunwale, fenders and deck-house.

Machinery and boilers—a new tumbler was supplied, also one bush and new shaft for lower tumbler. All piston friction-bearings and the rest of the machinery overhauled. A new funnel was installed on board and a little caulking done on both boilers. The electric wiring had a general overhauling and was put in good order. All buckets were repaired, and pins, bushes and teeth were renewed.

Dredge No. 3.—Summer repairs:—Hull—fenders, mudports, deck-houses, ladder frame and chute, were repaired. Machinery and boilers—ordinary repairs to main winch, stern and breasting winches were made. One plunger was replaced on fire pump. The boilers were caulked and a few steam pipes renewed. All buckets were taken to the shipyard to be repaired, and the pins, bushes and teeth renewed.

Dredge No. 4.—Summer repairs:—Hull—fenders and upper decks, the stairs and mud fenders were repaired. Lattice on ladder frame was straightened, and the upper decks were covered with new canvas. Machinery and Boilers—piston, brasses, frictions and bearings of main and auxiliary winches were put in good order and one new force oil-pump, one new upper tumbler and two valve rods for lower pressure cylinder of main engine were installed. The hull was scraped and one coat of bitumastic solution applied between the frames and the hull. The scraping was done by the sand-blast process, from the fire hole to the stern of the boat and in one compartment forward. All the buckets were taken to the shipyard to be put in good order, and the bushes, pins and teeth renewed.

Dredge No. 5.—Summer repairs: This vessel had ordinary operating repairs during the season. Winter repairs.—Hull—the deck was renewed all over, and some caulking done specially under the chute. The bulwarks, fenders, stanchions and rail were renewed, the deck-houses put in good order, the canvas renewed on upper decks, lattice of ladder frame straightened and chute repaired. Machinery and Boilers—new eccentrics and link were installed on main engine, a new worm gear on bow winch, a new shaft and valves on top winch. The breasting, bow and stern winches, had ordinary repairs, the boilers had a little caulking and a patch placed on starboard side. All the buckets were overhauled and put in good order, pins, bushes and teeth renewed.

Dredge No. 6.—Summer repairs:—The ladder-frame was bent while digging, and had to be repaired, the lattice straightened and all the operating repairs made during the summer. Winter repairs:—Had general repairs to deck, railings, stanchions and well, centre frame and mud fenders renewed, general repairs made on engine house, deck awnings canvassed anew. Caulking was done around the well, the brackets of ladder frame renewed and the lattice repaired. New cranks on clutches of breasting winches and one new worm gear and worm were supplied for chute winch. Heavy repairs to the chute and general overhauling of main and breasting winches were made, and many tubes renewed in both boilers.

The buckets were taken to the shipyard to be overhauled, and all the pins, bushes and teeth renewed.

Dredge No. 7.—Summer repairs:—This boat had ordinary operating repairs, specially on boilers. Winter repairs: The deck houses, floors of engine room, coal bunkers and mess room, fenders and upper deck were put in good order. Machinery and boilers—repairs were made to piston, and slide valves of winches and pumps overhauled and repaired, the bearings, thrust shafts and guides of main engine rebabbitted. A new bush for h.p. cylinder, new worm gear for bow cable, winch and new shaft to cutter head supplied, general repairs made to steam and exhaust pipe, and some caulking done on the boilers, and the Diamond blower blast overhauled. The bottom of shell, between floors and door beams, were all cleaned from bow to stern, with sand blast and coated with bitumastic solution, and a coat of bitumastic cement was placed over the bitumastic solution, under the boilers and engines. Discharge

pipes—during the summer, two lengths of the discharge pipes were hauled on the ways for repairs, having been damaged through rough weather on lake St. Peter.

The twenty-four, 100-foot lengths of discharge pipes were hauled out on the 9th November for winter. Heavy repairs to the steel and wood work made, and were all painted, the wooden blocks replaced and inside doubling plates of centre tube renewed.

Dredge No. 8.—Summer repairs:—This dredge operating below Quebec, has a machine shop, and a good deal of her own repairs are done on board, and only heavy pieces or parts are taken to Sorel to be repaired. Winter repairs:—Hull—a new fender was added to each side of the hull with uprights between the old and the new fenders, spaced at 8 inches distance from centre to centre 5 inches by $\frac{3}{4}$ -inch half oval steel bars and placed over them, and combing of the wheel house repaired. Two new life boats—one 20-foot and, the other 16-foot were placed on upper deck to replace two old ones. Two davits, 5 $\frac{3}{4}$ inches diameter were placed opposite the breasting anchors. A new sheave for the bow wire was renewed. New flanges were placed at both ends of house pipe, and two new anchor-chain stoppers supplied. The upper deck was repaired and caulked, and all the ordinary repairs to windows and doors made as usual. Machinery and boilers—main engine pumps and winches were overhauled and repaired and a bilge pump added. The discharge pipe was lengthened to discharge between the two fenders, six doors cut through the discharge pipe of the 30-inch centrifugal pump for cleaning purposes, the windlass repaired, chain wheel and large spur gear renewed. A new cutter head was fitted with a new set of blades, protecting plates over cutter head shaft extended about 35 feet at the cutter head end, and a lot of different little jobs on pistons, cross-heads, frictions, etc., made, which it is difficult to mention.

Dredge No. 9.—Summer repairs:—Had ordinary operating repairs during the season. Winter repairs:—Hull—general repairs to fenders; the house pipe flanges were renewed; dredging cranes and windlass overhauled and repaired. The gasoline launch was replaced by a new 20-foot life boat. Deck houses were repaired in different places, and canvas of bridge deck renewed, and the forward part of main deck caulked all over. Both the starboard and port discharge pipes of the centrifugal pump were repaired, and three trimming-doors added to each. Machinery, engine and boilers—the heaviest job made on the engine was the repairing of intermediate cylinder of port engine. This cylinder was badly cracked in the steam chest. A splice was placed and, after trials, proved to be satisfactory. The seat and slide valve of the starboard engine was repaired, the seat being planed and a new piece studded in place. The valve was renewed, but to make these repairs, the two cylinders had to be removed and sent to the shop. This was done by removing the skylight on the engine-room, as there was no other opening to pass the cylinder through. The rest of the auxiliaries, winches and pumps were all overhauled and repaired. The armature of the dynamo was renewed, and the electric wiring overhauled. One of the furnaces of the starboard boiler was repaired so as to last another season, but it will be necessary to buy, this summer, new corrugated furnaces to be placed on board next winter, to replace the old ones, which have been condemned by the boiler inspector.

Dredge No. 10.—Summer repairs:—The eight-yard dipper of this dredge was repaired pretty often during the season, the shell being broken, besides renewing the teeth points. Latches of doors were also renewed several times. The other parts of the machinery which had to be replaced were the friction box plates, copper plates, and the frictions, and many other little pieces which are not worth mentioning. Deck houses and hull were painted during the summer on account of this dredge wintering in Montreal the previous season. Winter repairs:—Hull—fenders around the boat were all repaired, and extension to the deck house made, to give more accommodation to the increasing number of men on board for night work. Machinery, engines and boilers—the main engine and drum were examined and refitted, bushes of drum renewed and

SESSIONAL PAPER No. 21

rings of piston replaced; auxiliaries and piping were overhauled and repaired. The dynamo and electric wiring were repaired and a new back cylinder, 12 inches diameter, lengthened to 15 inches. The dipper arm was re-riveted. Two large wooden fenders for corner of the spud boxes were repaired and steel sheeted. A new wire rope was placed on the stern spud; the swinging table lifted, the bearing being worn out.

Dredge No. 11.—Summer repairs:—Repairs were made several times during the season, to the eight-yard bucket, and to dipper arm. A new house was built for the cranesman. The frictions of main engine were renewed, and all usual operating repairs made to the dredge during the summer. Winter repairs:—The fenders were repaired, and two lengths of half-oval steel bars were renewed and wooden fenders on corner of spuds lengthened, repaired and steel sheeted. An extension to the upper deck house was built to give more accommodation to the crew, and general repairs made to the electric wiring, etc. Machinery—the machinery and boilers were overhauled and repaired.

Dredge No. 12.—This dredge was put in commission last fall. A few little alterations and additions were made to complete and improve her during November, 1912. Winter repairs: Hull—two steel mud guards were built on this vessel during the winter, to prevent the dredged material falling from the buckets to the main deck. The angle of breasting rollers were changed at both ends. Railings, which had been broken by the fall of boom of the derrick, were repaired. Holes were cut on the ladder frame in steel webs, to clear the frame of the mud. The bottom planking was removed to replace bushes and repair the shaft. Machinery—the engines and winches were examined and found in good condition.

PAINTING.—The hull and deck houses of all the above vessels were painted as usual.

REPAIRS TO DOMINION STEAMERS.

Lady Grey.—This steamer, operating as ice breaker between Quebec and Three Rivers, had no repairs at the shipyard. A good coat of paint was given to her hull and deck houses.

C.G.S. Frontenac.—Summer repairs:—No. repairs of importance during summer. Hull and deck houses were painted twice during the season. Was hauled on the ways for winter, on December 12, 1912, to repair the bow under the water line. Winter repairs:—Hull—forward part above and below water line and stern part outside planking was renewed. The stern part was renewed from water line up to the deck. Framing, forward, was strengthened, officers' room on stern of hull and the crews' quarters were repaired. Main part of main deck, forward, and five beams and stanchions were renewed. Repairs were made to combing, fenders, life-boat, and to refrigerators. General overhauling of steering gear and repairs to deck house. Machinery—had repairs to thrust-block of port engine, new valve rod bushes and piston rods for h.p. and l.p. cylinders. Cylinders were packed anew and steam valve on dynamo was replaced. Inside of boiler was scraped and cleaned. Coal bunkers' bulkheads were repaired and painted.

REPAIRS TO ST. LAWRENCE SHIP CHANNEL VESSELS.

Tugs.

Tug Laviolette.—Summer repairs:—The tug was hauled out on July 23, 1912, to change her propeller, and was put on the ways again on August 9 for a new propeller. Winter repairs:—Consisted of the installation of a new steering gear to replace McDougall's patent gear, which was found unsatisfactory.

4 GEORGE V., A. 1914

Tug Carmelia.—Summer repairs:—The *Carmelia* was hauled on the ways, April 25, to repair her rudder and tail shaft; was placed on the slip again on June 6, for inspection of hull and light repairs required for operating the vessel. Winter repairs:—Hull—general repairs were made to deck, three new bulwark brackets supplied, repairs to bow posts, and a large skylight was made to improve ventilation of galley placed below main deck. Fenders were also put in good order and the deck had a good caulking. Engine and boilers—repairs to valves, injectors and feed pumps, new bushes for piston rods and valve rods, new thrust block and new bushes in air pump, and repairs to smoke box were made.

Tug Contrecoeur.—Summer repairs:—This vessel was hauled out on the 12th of June to install a new propeller. On the 19th October the *Contrecoeur* was placed on the slip again to replace her propeller, which was broken. This vessel was working near Montreal in shallow water, hence the frequent accidents to her propeller. Winter repairs:—During winter a latch was placed on starboard rail, and an awning made for the stern. The engines were overhauled and slack taken up.

Tug De Levis.—Summer repairs:—Light repairs were made during the season. Winter repairs:—The gunwale and fenders around the boat were repaired. The chains for rudder were renewed. The hull was scraped and the deck was caulked all over. The deck houses and deck were painted. Some of the inside partitions, removed to repair the boilers, were replaced. Engine and boilers—the engine was only overhauled and few pins renewed; but the heavy repair was on the boiler, the bottom of which was altered and, from a water-pan boiler, was made a 'D' boiler.

Tug Portneuf.—Summer repairs:—This tug had few operating repairs during the season, was hauled out on the 29th June, 1912, for a new propeller, and again on July 9 for another propeller. Winter repairs:—The stem, fender, near the bow deck, and handrails were repaired, and the deck and wheel house were put in good order. Machinery—she had a new valve rod for horse-power cylinder; new bolts for stuffing box of valve-rod for light power cylinder; new pin and block on link motion. Repairs to maintain stop valve and general repairs to steering gear.

Tug Lotbinière.—Summer repairs:—This being a new boat, practically had no repairs during the season. Winter repairs:—Consisted of light repairs to deck, hand-rail and rudder.

Tug Lanoraie.—Summer repairs:—Practically no repairs during summer. Winter repairs:—Few repairs to machinery. The injector and surface blow-off were put in good order and a new spring placed on lower pressure piston.

Tug Lac St. Pierre.—Summer repairs:—She had ordinary operating repairs and was hauled out on 19th July, 1912, for a new propeller, and placed again on the slipway on 13th November, 1912, for another propeller. Winter repairs:—Consisted of caulking of deck over fore-castle, repairs to railings and rudder post, a new awning for stern. Machinery—four pistons were repaired, one piston-rod and three eccentric straps renewed. General repairs made to steam and water connections, caulking of seams on boiler, new bottom part of smoke box.

Tug Jessie Hume.—Summer repairs:—Consisted of ordinary operating repairs during the season. This boat was hauled on the ways in December, for winter repairs. Winter repairs:—The wooden hull was all renewed from water line up to the main deck, had new bulwark and fenders. Deck houses were repaired and a new room for the captain was built behind the wheel-house. A new boiler was built in Sorel shipyard during the summer and installed on board. The engine was removed from the vessel to the machine shop and thoroughly overhauled. The thrust-block was also renewed and shafting and rudder overhauled.

Tug James Howden.—Summer repairs:—She was hauled on ways, 25th April, 1912, to repair tail shaft, put on the slipway again on 10th October, 1912, for caulking

SESSIONAL PAPER No. 21

her hull, which was at the same time scraped and painted, and on December 6, 1912, was hauled out again to repair tail shaft and brackets. This vessel was operating, in connection with dredge *Beaujeu* below Quebec, and had ordinary repairs during the season at the machine shop of that vessel. Winter repairs:—Consisted of general caulking of hull, repairs to outside planking and caulking. Machinery—She had one new rod and general repair to sanitary pump, repairs to pins of rocking-shaft, with new bushes and adjustment of eccentric band, boring of both horse-power cylinders, and a new stud placed on valve cover horse-power cylinder to rebabbit brasses of crank pin. In the steam piping, the drains of main engine were repaired, flanges and a few lengths of pipes renewed, heavy caulking and new splices on the boiler, partitions removed, for boiler makers, between the engine room and fire hole, boiler raised up over two feet, and all the pipes reconnected. The bunker partitions were removed and, after repairs were made, a good coat of asbestos was applied around the boiler and main steam pipes.

Tug Iberville.—Summer repairs:—No repairs of importance were made on this boat, except to the propellers and tail shaft. She was hauled on ways, 23rd July, 1912, for a new propeller, hauled again on the slipway, September 16, 1912, to have a new key fitted to her propeller. She was placed again on the ways on October 16, 1912, to refit key on propeller, and again on November 2, 1912, to have her tail shaft repaired. Winter repairs:—Hull—Caulking of deck over forecastle, placing of two freeing ports on each side of boat in bulwark, general repairs to railings and fenders. Machinery—had a new air-pump bracket and general overhauling of main engine and auxiliaries. Had a little caulking on boiler seams.

Tug Varennes.—Summer repairs:—She was handed out September 24, 1912, for caulking and repairs to hull, was supplied with one pair of davits on starboard side and had light repairs to windlass.

Tug Emilia.—Summer repairs:—This vessel was hauled out on the 24th September, 1912, to caulk and repair the hull and tail shaft, and light operating repairs. Winter repairs:—Hull—General repairs were made to outside planking of deck, to fenders, and caulking of deck. Machinery repairs were made to piston, steam valves, eccentric straps of main engine, and general repairs to steam and exhaust piping, and alteration to water pan of boiler, which was the heaviest repair on this boat.

Rock Cutters and Stone Lifters.

Rock Cutter No. 1.—Summer repairs:—Few operating repairs were made during the season.—Winter repairs:—Cutter head was put in good order; new collar and new springs, new sheave on top of main frame supplied and general overhauling of machinery, repairs to crank, pin brasses, eccentric straps and cross-head brasses made and a new oil basin placed under the main hoisting winch.

Stone Lifter No. 3.—Summer repairs:—No repairs worth mentioning were made during the season. Winter repairs:—The deck was renewed and handrail, stanchions and floor of fire hole repaired. Machinery—General overhauling and repairs to winches were made, new teeth to grips, with new steel shaft supplied, set of new grate bars installed in boiler.

Sounding Scow.

This vessel had no summer repairs. Winter repairs consisted of planking and fender repairs, one new mast placed on board and shaft of main winch straightened.

Floating Shop.

This being a new boat, no repairs were required during summer. Winter repairs:—Light repairs were made to handrails, to gasolene engine and shafting.

Dumping Scows, Etc.

Repairs were made on the hull and hydraulic machinery of twenty-five scows.

4 GEORGE V., A. 1914

Coal Barges.

Coal barge No. 1.—Practically no repairs during summer, but a new injector was installed on board during winter. The winches were dismantled and repaired, new set of grate bars were installed in the boilers, besides general caulking to boiler tubes and seams. Hull repairs consisted of new gunwales, heavy repairs on main deck, new fenders and heavy repairs to deck houses, new combing and roof.

Coal Barge No. 2.—Summer repairs:—This barge being below Quebec all summer, had no repairs during the season. Winter repairs:—Consisted of repairs to rudder, bulwark, deck and keelson, one foremast, and general caulking to deck and outside planking, winch repairs, new brackets, brasses, new pins and bushes to pumps, general painting to hull and deck-house.

Coal Barge No. 3.—Summer repairs: Repairs were made to mast foundations and bullards, two new pawls supplied and repairs to whistle and coal tubs made. She was hauled out on the ways on the 20th May, to put new stem in, in place of one broken on Sorel wharf. Winter repairs:—General repairs were made to deck, fender and keelsons, two new blocks for derrick installed on board, new life-boat supplied, the hatches repaired, the rudder box caulked, general overhauling of winches and pumps made and the hull and deck-house painted.

Coal Barge No. 4.—Summer repairs:—She had light repairs during the season, was hauled out on November 20 for steel sheeting at water, line of hull, from stem to stern post. Winter repairs:—She had fender and heavy repairs to outside planking, deck and bulwarks, new awning was placed around foredeck houses, and a new ceiling was built to deck house, and supplied with a new life-boat, had general repairs to winch and machinery, and hull and deck-houses were painted.

Coal Barge No. 5.—Summer repairs:—The deck was caulked and the masts repaired; a new lubricator and a nigger-head to work in connection with the lifting of buoys installed. Winter repairs:—Deck over forecastle was repaired, shield plates were placed on hull to protect the vessel against the working of the anchors, a new canvas covering was placed over the winch, and the derrick wire ropes were renewed. A general overhauling of winches and the installation of a new pony pump, and injector made, besides general painting of hull and deck houses.

Shipyard launches.

The engines of yachts *Buffalo* and *Bronx* were taken out and overhauled thoroughly, and their hulls caulked and painted.

All the above mentioned tugs, barges, etc., were painted as usual early in spring.

REPAIRS TO VESSELS OF CONSTRUCTION AND MAINTENANCE OF LIGHTS BRANCH, DEPARTMENT OF MARINE AND FISHERIES.

Steamer Vercheres.—Summer repairs:—Had light operating repairs during the season. Winter repairs:—Fenders were sheeted with steel plates under bolt anchors, deck repaired at different places, main deck fore and aft, thoroughly caulked and put in good order; wheel-house raised about 18 inches and steering gear overhauled; ventilator in upper deck houses removed and a new stove installed in galley. Repairs were made to crank shaft and piston of horse-power cylinder; new rings for piston steering gear and a new flange to support grate bars in boiler supplied.

Steam Barge Shamrock.—Summer repairs:—This barge had few repairs to machinery and hull; was supplied with bolts for buoy anchors and shackles to be used in connection with her work. Winter repairs:—Repairs to deck stanchions railing, doors and windows and general overhauling of her engine, and light repairs to boiler were made.

SESSIONAL PAPER No. 21

Steamer Hosanna.—Summer repairs:—Very light repairs were made to hull and machinery. The hull and deck houses were painted a couple of times during the season. This vessel was hauled out on the 4th June, 1912, to take off tail shaft and renew bushes, was hauled out again on the 29th August, 1912, to fit new key to propeller. Winter repairs:—General repair and caulking of main deck from bow to stern were made. Signal bells and wire connections were thoroughly renewed, and a new stove was installed on board. Repairs to circulating pump, feed-pump, pistons and valves of main engine and blow-off pipe were made, new steam gauge pipes and general repairs to piping made; and the smoke-box of the boiler was put in good order and a new set of grate bars added.

Supplies for Construction of Light Department.

Seventy job numbers were issued during the season, excluding all the orders given for repairs on tugs, scows, barges, for the preparing of supplies and repairing parts for their work. The items are more or less important. They were generally for anchor bolts, tools, planks and logs for construction purposes, washers, etc., etc.

A McLellan surf boat for Cheticamp, was fitted up and trials made with the boat. The Cheticamp light-keeper remained at Sorel for some time and was trained to the handling of the engine and boat it was sent to Cheticamp.

Barge Sarah.—Had light repairs to winch.

Steamer Alpha, was hauled out on the 17th September to repair her rudder, placed on the slipway again on 14th December to repair rudder shaft and caulk her hull below water line.

Barge Acetylene.—Had light repairs during summer, was painted inside and outside during winter.

Light repairs to galley equipment, electric wires, life boat, etc., and general painting inside and outside were made.

Dominion Lighthouse Depot, Prescott.

Eight heavy castings for one large automatic light, were machined at the shipyard for this branch of the service.

Naval Service Department.

One gauge house was built for this department.

Maintenance of Lights Department.

Quite a lot of buoy repairs for this branch of the department, and a good many bolts and other fittings were prepared for their work.

REPAIRS TO VESSELS OF THE DEPARTMENT OF PUBLIC WORKS.

Dredge No. 3.—Repairs were made to 'A' frame and machinery and tools supplied to this dredge.

Dredge W. S. Fielding.—The following articles were supplied to this vessel: 6 large hexagon-head bolts, 1 cast steel bucket roller, 1 shell for lower tumbler.

Dredge St. Louis.—This vessel had general repairs and was supplied with new bolts, pins, etc.

Barge Beauport.—This barge was required to help lifting up the hull of an old vessel sunk opposite Marine and Fisheries' wharves at Sorel.

Tug Albany.—Came to Sorel once during summer to have her signal bells repaired.

Gazoline Launch Fast.—Was hauled on the ways on 17th June, 1912, to change her propeller.

Tug Mina G.—Was placed on the ways on 29th July, 1912, for repairs to rudder and tail shaft.

4 GEORGE V., A. 1914

Tug Ottawa.—The propeller shaft was straightened. Hauled out 12th July, 1912. Placed on the ways again on 21st August, 1912, for repairs to plating of rudder and installation of new propeller. Had a new propeller on 12th September, 1912.

Steamer Speedy.—Summer repairs:—She was hauled out, June 24, 1912, for repairs to rudder and propeller shaft. Painting of hull and deck houses. The boiler was put in good condition and machinery had few light repairs.

NEW CONSTRUCTIONS.

Dredge No. 26.—Elevator dredge now known as *Dredge No. 12*. This vessel was completed during the year. The items remaining to be done at beginning of fiscal year, were the lighting system, installation of auxiliary machinery, plumbing, steam heating system and general equipment. This is a steel elevator dredge, 180 feet long by 40 feet wide, 14 feet deep. The engines are compound, direct acting, condensing, designed for a working pressure at engines of 120 pounds per square inch, and capable of developing 450 indicated horse-power, with an equivalent speed of buckets from 16 to 17 per minute. The chain is fitted with 50 dredging buckets of 13 cubic feet capacity each.

Construction No. 32, Coal Barge.—This barge is built of steel throughout, 132 feet long by 30 feet wide by 11 feet 6 inches draught; has a capacity of 500 tons, was put in commission during the year and is now known as *Coal Barge No. 5*.

Construction No. 33.—Steel dumping scow, was completed during the season. Dimensions: 106 feet long by 21 feet by 10 feet. This scow is fitted with conical valves worked by hydraulic cylinders.

Construction No. 35.—This wooden tug was completed and put in commission under the name of *Varennnes*. Dimensions: 92 feet long by 22 feet beam by 6 feet draught. Has twin propellers. The engines are compound, inverted direct-acting, jet-condensing type, h.p. cylinder forward and l.p. cylinder aft. Air, feed and bilge pumps are worked by levers and links from h.p. The engines have a working pressure of 150 pounds per square inch. Diameter of h.p. cylinder 11 inches diameter of l.p. 22 inches, length of stroke, 18 inches.

Construction No. 37.—Elevator dredge; steel hull; was launched on May 31, 1912. Dimensions: 180 feet long by 40 feet wide by 14 feet deep. The engines and machinery are a counterpart to dredge No. 12, has a chain of 50 dredging buckets, 13 cubic feet capacity each. During fiscal year, the auxiliary machinery, a five ton derrick, water-tight doors, copper piping, plumbing, grating and railings were installed. Deck houses were built. This dredge will be completed early in July and put in commission under *No. 13*.

Constructions 36 and 38.—Two steel tugs 92 feet long by 22 feet beam by 6 feet draught.

Construction No. 38 was completed and put in commission under the name of *Laviolette*. She is a twin screw tug.

Construction No. 36 is nearing completion and will be put in commission early in May under the name of *Lavaltrie*.

The engines for these two boats are the exact counterparts of the engines for tug *Varennnes*, construction No. 35.

The work performed on No. 36 during fiscal year consisted in the erection of auxiliary machinery steam and exhaust piping, railings, steam heating system and part of equipment.

Construction No. 39.—Testing scow, wooden hull, 76 feet by 32 feet by 7 feet 4 inches draft. This vessel will be completed in June.

Construction No. 40.—Rock Cutter No. 1. Built of steel, 100 feet by 36 feet by 9 feet. Was completed and put in commission early during summer 1912.

SESSIONAL PAPER No. 21

Construction No. 43.—Two wooden scows. Dimensions: 93 feet by 26 feet 6 inches by 8 feet 6 inches. During the year hydraulic machinery was installed on board, and they were completed and placed in commission.

Construction No. 44.—Stone lifter, steel hull, 100 feet long by 36 feet by 9 feet 10 inches draught. During fiscal year, main hoisting winch was placed on board. A boiler is being built in the shipyard for this vessel. Smoke-box and funnel were built, the bunkers prepared, plumbing and bilge piping started, and will be completed in July and put in commission under the name of *Stone Lifter No. 5*.

Constructions 45 and 46.—Two steel tugs, 100 feet long by 22 feet 6 inches by 10 feet draught.

The material for hulls was purchased, estimates and lists for boilers prepared and ordered for these new tugs.

Constructions Nos. 47 to 50.—Four steel dumping scows, 140 feet long by 30 feet by 11 feet 9 inches draught; 450 cubic yards capacity. Plans were prepared and material ordered.

Constructions Nos. 51 and 52.—Two 235-yard steel dumping scows. During the year, the hull was nearly completed and hopper doors made. Dimensions: 100 feet by 29 feet by 7 feet 3 inches draught. This vessel will be completed early in July.

Construction No. 53.—Gasoline launch for shipyard 30 feet by 7 feet by 3 feet 6 inches draught. Plans prepared and material ordered.

MAINTENANCE AND IMPROVEMENTS TO BUILDINGS AND PLANT OF THE SHIPYARD.

Building No. 1.—Proposed offices. A complete set of drawings and list of material were prepared, during the winter, for new offices, and were sent to the department at Ottawa for approval.

Building No. 2.—Boiler shop, including ship building department. During summer the heating system and the doors and windows were repaired and a coat of paint was applied all over. The roof and inside of building were given a good whitewashing. A new 5-ton hand crane was installed in this building. During winter, work in the roller department of this shop was delayed on account of high water. The floor of this building should be elevated to the level of the boiler shop floor—that is, about three feet.

Building No. 3.—This building includes the punch shed, asbestos repair shop, steamfitters' and tinsmiths' shops and old office for labourers. A new office was built for foreman of labourers in shipyard, with installation of new w.c.; general repairs were made to heating system, and the tinsmith department extended. General painting of building and whitewashing all over and inside of bending slabs department, punch shed, etc.

Building No. 4.—Shipyard offices. Repairs on this building were delayed pending construction of the proposed new offices, which were to be ready for 1st of May. Temporary repairs were made to balcony and foundations.

Building No. 5.—Machine shop, including machine and pattern shops and stores for patterns, fire hole No. 1, and steam pumping station. General overhauling of the heating system and installation of new w.c. next to buildings. The tin roof was also repaired. General painting to building and roof. The electric department, which used to be in machine shop, was removed to building No. 18, with the telephone exchange branch.

Building No. 6.—Blacksmiths' shop. This is a very old building and heavy repairs to roof and foundations have to be made quite often. Usual repairs were made last winter. The heating system was improved, and new w.c. installed. The exterior of building was painted and the interior whitewashed. The ventilation was also improved.

Building No. 7.—This is a storehouse where rivets, wire rope, boiler tubes, etc., are kept. New floors were built and shelves installed for storing goods, etc.

4 GEORGE V., A. 1914

Building No. 8.—Stables. As this building was in a very bad condition, repairs had to be made to the floor, windows, doors, and electric wiring and a partition, inclosing room used to repair harnesses, removed so as to make the space for horses wider and better ventilated. The building was painted outside and whitewashed inside.

Building No. 9.—Carpenters' shed was lengthened about 20 feet to make a department for life-boat building, all the building painted; this part is well lighted, which helps men to do their work better.

Building No. 10.—Ice-houses. Had no repairs. Building and roof were painted.

Buildings 11, 12, 14 and 15 practically had no repairs. New shelves and racks were installed for storage of goods.

Building No. 16.—Power house had whitewashing of the centrifugal pump department, placed at the rear of this building, below ground level; general overhauling of heating system, and repairs to windows, and painting.

Building No. 17.—Saw-mill had installation of a chute for cleaning of sawdust and shavings of the cabinet department, and light repairs to windows and doors, etc.

Building No. 18.—This building includes paint-shop, electric shop and moulding loft. The paint department was extended to make room for paint stores, etc. A re-arrangement of counters and benches had to be made with the new installation. The asbestos stores were removed to building No. 3. New shelves were installed in this section. The office for the foreman of electric department was extended and the heating system rearranged and improved; fire hose were placed at each end of building and the interior of painting and electric buildings painted.

Building No. 19.—Pattern shed. Temporary foundations were made to this building.

Building No. 20.—Dry lumber shed. No repairs were required.

Building No. 21.—Fire hole No. 2 was whitewashed inside and outside.

Building No. 22.—Shed for castings had repairs to platform for castings, and light alterations to store brass castings apart.

Building No. 23.—Dry kiln had general repairs to heaters.

Building No. 24.—Shed for storing new machinery. Practically no repairs were made to this building.

Building No. 25.—Shape-bending forge, had one coat of whitewashing inside.

Building No. 26.—Main gate-house had light repairs to doors and windows, damaged by setting of foundations of building.

Drafting Room had alterations to tables and installation of new cabinets for draughtsmen supplies.

New Sheer Legs.

During the year the concrete piers of foundations were completed and the erection of the legs and installation of machinery was begun.

Description of Sheer Legs:—Lifting capacity, main hoist, 130 tons; tested to 140 tons; from bottom joint of front legs to full out position of falling block, 57 feet; from top of wharf to highest position of swivel eye on falling block, about 102 feet; maximum travel, bottom end of back leg, 60 feet; lifting capacity of auxiliary hoist, 50 tons; lifting capacity whip hoist, 5 tons.

The sheer legs will be actuated by a pair of high pressure double-acting reversing steam engines, through suitable gearing for all the motions, viz., main and auxiliary hoisting and traversing the back leg. The steam cylinders are 16 inches diameter by 24 inches stroke. The whip hoist and guy rope are each operated by an independent steam winch in engine house. The working pressure for the engines is 75 pounds per square inch.

The sheer legs are being erected a short distance below wharf No. 4, which is the nearest site to the St. Lawrence. Eventually the steam railway track will be brought to this point, so as to handle material, either from the cars to a vessel, or from the vessel to the cars, by means of this crane.

SESSIONAL PAPER No. 21

General.

A contract for sand blasting hulls of dredges Nos 4 and 7 was given to the Concrete Sand Blast Co., of Montreal, to try bitumastic solution, which gave very good results, and it was decided to purchase an apparatus for sand blasting and later on employ our own men to do this work in the shipyard.

For Hydrographic Survey Department.—Six gauge houses were built during winter and equipped for this branch of the service.

All the vessels of dredging fleet were painted before opening of navigation. The shipyard buildings were also painted and kept in good order. The machinery was overhauled and improved. Fences and sheds were whitewashed. The roads were maintained in good order. Ice was cut around vessels during winter.

The telephone and electric lines were kept in good condition, and improved. The fire protection was improved and the fire brigade re-organized.

All wharfs and ways have had the ordinary repairs and been kept in good condition.

The financial statement shows the total amount expended at the Sorel shipyard and ship channel to have been \$735,057.31.

The force employed during the fiscal year varied from 511, in November, to 847 in March, 1913, and averaged 680 daily.

GENERAL REMARKS.

During the fiscal year 1912-13, many improvements have been effected towards placing the Sorel shipyard on a good, sound, commercial basis, and the general condition of things changed and improved all around.

Superfluous men have all been suspended, and the number now working are allocated and arranged in such a way that all are fully employed.

The wages generally, especially that of the labouring classes, were admitted to be under the average paid elsewhere in Canada. The men were soured and would not work, therefore a general increase of about 12 per cent has been made during the past 12 months.

With all the improvements and alterations made in the shipyard, the actual wages bill and general expenses have been reduced considerably.

The men are now more attentive to duty and working very much better than formerly; as a result, the work is carried out more economically and expeditiously and a great deal more work is being done.

The sanitary arrangements have been overhauled and put in better shape, and a great amount of cleaning up and rooting out of obsolete stock, cleared, whitewashing and purifying done adding to the men's comfort and health.

Piece-work has been introduced in new construction, such as marking, punching, assembling of material, riveting, caulking, etc. Piece-work has also been introduced into the blacksmith shop, and the result is very satisfactory. The men work much harder, turning out a great deal more work and they are benefited financially, and our work is finished quicker and at less cost to us.

The fire appliance has been improved and a properly organized brigade introduced.

Properly framed rules and regulations have been printed and established for both the yard regulation and the fire brigade, and fire plug plans posted in various parts of the yard.

Altogether, a better state of things prevails and the yard is booming as it never did before.

I have the honour to be, sir,

Your faithful servant,

W. S. JACKSON,
Superintendent of Shipyard.

STATEMENT of Revenue and Expenditure for the Fiscal Year 1912-1913.

Year.	Amount.	Year.	Amount.
1913.	\$ cts.	1913.	\$ cts.
March 31..	2,651,543 76	March 31..	\$663,229 74
To Appropriation for River St. Lawrence Ship Channel actually expended		By operating dredging fleet.....	9,545 74
Appropriation for improvements to dredging plant:—		Construction for dredging fleet.	62,281 83
Construction No. 26, elevator dredge.. \$ 96,875 92		Improvements to Sorel shipyard.. ...	
" No. 33, 300 cu. yd. steel dumping scow.....	13,665 28	Improvements to dredging plant—	735,057 31
" No. 36, twin screw steel tug..	35,512 72	Construction No. 26, elevator dredge.	96,875 92
" No. 37, elevator dredge.	111,196 82	" No. 33, 300 cu. yd. steel dumping scow.....	13,665 28
" No. 38, twin screw steel tug..	18,204 75	" No. 36, twin screw steel tug..	35,512 72
" No. 39, testing scow, No. 3. . .	1,097 09	" No. 37, elevator dredge	111,196 82
" No. 40, rock cutter, No. 1	5,295 68	" No. 38, twin screw steel tug..	18,204 75
" No. 42, (2) 250 cu. yd. dumping scows.....	4,168 21	" No. 39, testing scow No. 3. . .	1,097 09
" No. 43, (2) 250 cu. yd. dumping scows	17,888 30	" No. 40, rock cutter No. 1	5,295 68
" No. 44, stone lifter, No. 5	23,139 96	" No. 42, (2) 250 cu. yd. dumping scows.. ..	4,168 21
" No. 45/6, 2 twin screw steel tugs	1,291 23	" No. 43, (2) 250 cu. yd. dumping scows.....	20,970 98
" No. 47, 450 cu. yd. steel dumping scow	1,114 61	" No. 44, stone lifter No. 5	23,139 96
" No. 51/2, (2) 230 cu. yd. steel dumping scows... ..	25,747 04	" No. 45/6 2 twin screw steel tugs.....	1,291 23
Steamer 'Bellechasse'	355,197 61	" No. 47, 450 cu. yd. steel dumping scow	1,114 61
Hopper Barge No. 1	71,500 00	" No. 51/2 (2) 230 cu. yd. steel dumping scows..	25,747 04
Hydrographic Survey, steamer 'La Canadienne' ..	28,168 00	Steamer 'Bellechasse'	358,280 29
Construction of Lights, P.Q.....	87 45	Hopper Barge No. 1	72,483 35
Maintenance of Lights, P.Q.....	3,523 55	New dredgers at Collingwood	28,498 97
C.G.S. 'Lady Grey'	6,574 72	New Scout	31,549 82
" 'Frontenac'	6,701 21	Barge 'Dollard'	1,652 60
" 'Verchères'	5,839 49	Hydrographic Survey, steamer 'La Canadienne' ..	305 54
" 'Montmagny'	2,861 00	Construction of Lights, P.Q.	89 01
" 'Lambton'	5 06	Maintenance of Lights, P.Q.....	3,523 55
" 'Simcoe'	30 17	C.G.S. 'Lady Grey'	6,577 97
Department of Public Works.....	17 61	" 'Frontenac'	7,951 44
Steamer 'Maisonnette'	2,576 34	" 'Verchères'	7,799 69
Quebec Agency	273 54	" 'Montmagny'	2,861 00
Prescott Agency	96 53	" 'Lambton'	5 06
Signal Service	516 03	" 'Simcoe'	30 17
Cheticamp Life-saving Station	163 37		17 61
	57 23		

La Cie Pontbriand, Ltd.....	328 76	Department of Public Works, repairs and supplies	3,098 96
J. McDougall & Co.....	25 78	Steamer 'Maisonneuve'	273 54
James Sheppard & Son.....	30 23	Quebec Agency	96 53
Paul & Salvail.....	4 28	Prescott Agency.....	516 03
Dredge Accommodation.....	54 25	Naval Service Department.....	48 76
Stores and material.....	125,391 54	Signal Service.....	163 40
		St. Ours Lock.....	186 38
		Cheticamp Life-saving Station.....	57 23
		La Cie Pontbriand, Ltd....	328 76
		Dredge Accommodation.....	54 25
		J. McDougall & Co.....	25 78
		James Sheppard & Son	30 23
		Paul & Salvail.....	4 28
	1,261,567 51		1,261,567 51

La Cie Pontbriand, Ltd.....

J. McDougall & Co.....

James Sheppard & Son.....

Paul & Salvail.....

Dredge Accommodation.....

Stores and material.....

SOREL SHIPYARD, March 31, 1913.

LOUIS LACOUTURE, Accountant.

W. S. JACKSON,

Superintendent of Shipyard.

APPENDIX No. 5.

STATEMENT of expenditure for the fiscal year, 1912-13.

Service.	Vote.	Expenditure.	Balance.	Overdrawn.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Ocean and River Service.</i>				
Dominion steamers and ice-breakers (including claims of merchants for supplying provisions to steamers <i>Aberdeen</i> , <i>Lady Laurier</i> , <i>Newington</i> and <i>Stanley</i>)	1,003,068 37	940,120 57	62,947 80	
Examination of masters and mates.....	11,500 00	9,992 66	1,507 34	
Rewards for saving life, etc.....	96,000 00	95,843 83	156 17	
Investigations into wrecks.....	18,400 00	13,673 11	4,726 89	
Schools of navigations.....	8,000 00	1,589 59	6,410 41	
Registration of shipping.....	1,500 00	1,487 89	12 11	
Removal of obstruction, etc.....	20,000 00	1,533 30	18,466 70	
Winter mail service ...	11,000 00	7,129 30	3,870 70	
Cattle inspection	5,000 00	3,429 99	1,570 01	
Wrecking plants (subsidy).....	35,000 00	35,000 00	.....
Patrolling northern waters, etc.....	59,000 00	10,736 02	48,263 98	
Unforeseen expenses.	5,000 00	663 85	4,336 15	
	1,273,468 37	1,121,200 11	152,268 26	
<i>Public Works : chargeable to capital.</i>				
Ship channel—River St. Lawrence.....	841,000 00	651,570 59	189,429 41	
Dredging plant—River St. Lawrence, Montreal to Father Point.....	1,037,000 00	673,019 26	363,980 74	
	1,878,000 00	1,324,589 85	553,410 15	
<i>Lighthouse and Coast service.</i>				
Agencies, rent and contingencies	117,000 00	116,504 74	495 26	
Salaries and allowances to lightkeepers.....	450,000 00	415,294 47	34,705 53	
Maintenance and repairs to lighthouses, etc., (including allowances to M. Barrett, Geo. Gott and J. McAllister)	701,200 00	687,813 45	13,386 55	
Construction of lighthouses, etc.....	1,000,000 00	642,416 52	357,583 48	
International Association of Navigation Congress.....	20,000 00	18,121 25	1,878 75	
Signal service.....	14,500 00	14,411 10	88 90	
Administration of pilotage.....	36,000 00	35,993 08	6 92	
Expenses of pilotage commission.....	3,000 00	3,000 00	.....
Maintenance and repairs to wharves ...	5,000 00	5,113 72	.....	113 72
Breaking ice in lake Superior, etc. (including allowances to Basil Guerard and J. McAllister)	65,200 00	54,172 38	11,027 62	
Telephonic reporting stations, Montreal to Quebec.....	24,000 00	20,881 19	3,118 81	
Repairs to Maritime road, Gaspé.....	1,000 00	.....	1,000 00	
Services of F. J. Harding.....	600 00	600 00	.....
Pension to retired pilots.....	6,300 00	5,700 00	600 00	
Telephones in connection with aids to navigation.....	5,000 00	738 16	4,261 84	
New steamer for river St. Lawrence to replace <i>Shamrock</i>	105,000 00	103,895 61	1,104 39	
New steamer to replace the <i>Scout</i>	110,000 00	.....	110,000 00	
New steamer for the Pacific coast.....	135,000 00	133,024 07	1,975 93	
Supplying Lloyds daily bulletin from signal stations	2,500 00	55 46	2,444 54	
Compensation to M. Brais.....	5,000 00	5,000 00	.....
	2,806,300 00	2,262,735 20	543,678 52	113 72

SESSIONAL PAPER No. 21

STATEMENT of expenditure for the fiscal year, 1912-13.—*Concluded.*

Service.	Vote.	Expenditure.	Balance.	Overdrawn.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Scientific institutions.</i>				
Meteorological service.....	146,500 00	146,449 15	50 85	
Magnetic observatory.....	1,000 00	996 93	3 07	
	147,500 00	147,446 08	53 92	
<i>Marine Hospitals.</i>				
Care of sick seamen and repairs to hospitals .	70,000 00	52,117 23	17,882 77	
Shipwrecked and distressed seamen	3,000 00	1,573 13	1,426 87	
	73,000 00	53,690 36	19,309 64	
<i>Steamboat Inspection.</i>				
Expenses of steamboat inspection	57,000 00	54,147 50	2,852 50	
<i>Fisheries.</i>				
Salaries and disbursements of fishery officers.	200,000 00	198,665 17	1,334 83	
Fish breeding establishments	322,300 00	283,793 43	38,506 57	
Fisheries patrol service.....	87,000 00	86,843 18	156 82	
Two fishery patrol boats for British Columbia	10,000 00	9,922 90	77 10	
Five lobster fishery patrol boats....	25,000 00	14,743 80	10,256 20	
Oyster culture	10,000 00	4,665 91	5,334 09	
Cold storage and transportation of fresh fish.	65,000 00	64,983 50	16 50	
Dog-fish reduction works	60,000 00	36,515 00	23,485 00	
Fisheries intelligence bureau	10,000 00	8,641 75	1,358 25	
Canadian fisheries exhibits	16,000 00	6,481 65	9,518 25	
International Fishery Commission	5,000 00	244 99	4,755 01	
Building fishways... ..	10,000 00	9,954 00	46 00	
Legal and incidental expenses	4,000 00	2,348 77	1,651 23	
Georgian Bay laboratory	2,000 00	2,000 00		
Marine biological	19,000 00	19,000 00		
Fishery patrol boat for British Columbia...	75,000 00	11,754 40	63,245 60	
Fishery Commissions	1,000 00	694 72	305 28	
Services of Customs officers <i>re</i> modus vivendi licenses	900 00	703 57	196 43	
Expenses of investigating claims for compen- sation under the Pelagic Sealing treaty....	10,000 00		10,000 00	
	932,200 00	761,956 74	170,243 26	
Fishing bounty	160,000 00	159,996 40	3 60	
Civil Government salaries	233,600 00	213,417 55	20,182 45	
Contingencies	36,000 00	35,996 90	3 10	
RECAPITULATION.				
Ocean and river service	1,273,468 37	1,121,200 11	152,268 26	
Public Works—chargeable to capital.....	1,878,000 00	1,324,589 85	553,410 15	
Lighthouse and coast service.....	2,806,300 00	2,262,735 20	543,564 80	
Scientific institutions	147,500 00	147,446 08	53 92	
Marine hospitals.....	73,000 00	53,690 37	19,309 64	
Steamboat inspection.....	57,000 00	54,147 50	2,852 50	
Fisheries	932,200 00	761,956 74	170,243 26	
Fishing bounty	160,000 00	159,996 40	3 60	
Civil Government salaries	233,600 00	213,417 55	20,182 45	
Contingencies.....	36,000 00	35,996 90	3 10	
	7,597,068 37	6,135,176 69	1,461,891 68	

APPENDIX No. 6.

STATEMENT of Revenue of Marine and Fisheries Department for fiscal year ended 31st March, 1913.

Service.	Amount.	Refunds.	Total.
	\$ cts.	\$ cts	\$ cts.
Piers and wharfs.....	33,599 53	500 20	33,099 33
Harbours.....	1,124 50	63 00	1,061 50
DOMINION STEAMERS.			
Champlain.			
Freight, \$2,888.84 ; passengers, \$7,131.57 ; meals, \$143.50 ; miscellaneous, \$165.....	10,328 91		
Earl Grey.			
Freight, \$10,121.64 ; passengers, \$4,200 ; meals, \$150.90 ; berths, \$1,164 ; express, \$281.07.....	15,917 61		
Minto.			
Freight, \$6,830.28 ; passengers, \$3,859.25 ; meals, \$169 ; berths, \$726 ; express, \$298.94 ; less refund to I.C.R., \$112.50 ; accounted for from 1911-12, \$1,575.....	11,770 97		38,017 49
Decayed pilots fund.....	4,816 02		4,816 02
Steamboat inspection fund.....	4,663 69	370 72	4,292 97
" engineers fees.....	1,705 00		1,705 00
Sick mariners fund.....	63,983 10	319 69	63,663 41
Signal station dues.....	788 00	1 00	787 00
Marine register fees.....	36 93		36 93
Fines and forfeitures (Marine).....	163 80		163 80
Examination masters and mates.....	3,639 06		3,639 06
Casual revenue (Marine).....	35,384 01	942 10	34,441 91
" (Fisheries).....	7,046 20		7,046 20
Fines and forfeitures (Fisheries).....	375 60		375 60
Fisheries revenue.....	93,064 41	95 40	92,969 01
Modus vivendi.....	13,573 50	73 50	13,500 00
Total	301,980 84	2,365 61	299,615 23
Fines which had been collected from pilots below Quebec and were refunded out of this year's revenue owing to their having been collected illegally.....			2,696 75
			296,918 48

SESSIONAL PAPER No. 21

REVENUE, minor Public Works—Wharfs, Piers and Harbours, for the year ended
March 31, 1913.

Wharfingers.

Locality.	Wharfinger.	Date of appointment.	Remuneration allowed.	Amount.
<i>Montreal District.</i>				\$ cts.
Coteau du Lac	Annie St. Amour.	July 4, 1912..	50 per cent.	1 25
Coteau Landing.	Napoleon Buerault.	Oct. 17, 1912..	50 "	1 58
East Templeton.	Leon Campeau.	May 13, 1913..	50 "	15 00
Fassett.	Napoleon Dounst.	May 16, 1913..	25 "	47 37
Graham.	A. Bertrand	June 26, 1912..	50 "	46 51
Hudson.	C. Bertrand	June 25, 1912..	50 "	71 64
Isle Perrot, North.	O. Legault.	May 30, 1910..	25 "	59 20
" South.	R. Daoust.			40 08
Knowlton's Landing.	L. Knowlton.	Mar. 23, 1910..	25 "	36 88
Lacolle.	R. J. Robinson.	Mar. 8, 1894..	25 "	9 46
Longueuil.	Etienne Benoit.	Mar. 9, 1912..	25 "	58 74
Magog.	D. E. Peters.	June 15, 1906..	50 "	71 41
Masson.	O. Daoust.	May 2, 1913..	\$100 per annum..	39 55
Montebello.	R. Seguin	Oct. 10, 1912..	50 per cent.	58 11
Papineauville.	A. Chabot.	April 10, 1912..	50 "	107 59
Pointe Fortune.	Wm. Brown	April 26, 1910..	25 "	100 33
Pointe à Valois	L. Castonguay		50 "	38 01
Port Lewis.	Samuel Carson.	Dec. 17, 1912..	25 "	26 03
Rigaud.	O. Mallette.	Oct. 14, 1907..	50 "	61 89
St. Anicet.	N. Bethune.	Mar. 21, 1912..	50 "	101 23
Ste. Anne de Bellevue.	M. C. Bezner.	May 21, 1908..	50 "	256 05
Ste. Zotique.	A. Brissonnette.	May 7, 1906..	25 "	15 00
Vaudreuil	Zenon Dentisac.	July 1, 1913..	50 "	73 08
Verchères.	A. St. Pierre.	Mar. 8, 1913..	25 "	151 17
<i>Quebec.</i>				1,487 16
Anse aux Gascons.	S. A. Huard	May 5, 1913..	25 per cent.	8 00
Anse à L'Islet.	J. Duguay.	April 17, 1912..	25 "	16 91
Anse St. Jean.	F. Lavoie.		\$19 per annum..	44 56
Bari St. Paul.	Polycayse Cimon.	July 27, 1912..	\$32 "	92 97
Beauport.	F. Guillot	April 25, 1912..	50 per cent.	40 08
Berthier.	J. Blais	Nov. 7, 1905..	50 "	69 52
Carleton	B. Leclerc.	June 13, 1905..	\$50 per annum..	37 67
Cap à l'Aigle.	A. Dufour	May 11, 1906..	\$18 "	41 40
Château Richer	Nere Pare.	May 13, 1912..	25 per cent.	101 94
Chicoutimi	T. Tremblay.	May 23, 1901..	\$122 per annum..	629 65
Grande Entrée	T. Rankin.	June 26, 1912..	25 per cent.	17 35
Grand River	Geo. Bellevian.	April 27, 1912..	25 "	103 14
Grindstone.	J. Ballantyne.	Dec. 22, 1909..	25 "	441 04
Les Eboulements	D. Venzina.	June 13, 1904..	\$29 per annum..	70 20
Isle aux Grues.	T. Tremblay.	May 7, 1906..	25 per cent.	1 51
L'Islet.	Under lease			25 00
Matane.	Alex. Pelletier.	Jan. 20, 1912..	50 per cent.	160 13
Murray Bay.	Wm. Tremblay.	Mar. 1, 1913..		932 87
New Carlisle.	Jno. Hall.	April 25, 1912..	50 per cent.	88 64
Paspebiac.	J. de Caen.	Feb. 22, 1908..	50 "	39 45
Percé.	J. M. LeBoutillier	April 17, 1912..	40 "	152 82
Port Daniel.	F. X. Gagnon	Feb. 26, 1907..	50 "	22 20
Rimouski.	W. Lavoie.	Mar. 27, 1907..	50 "	75 73
Rivière Blanche.	Alphonse Zuinpune.	June 24, 1911..	25 "	105 72
Rivière du Loup.	L. J. Pinze.	Nov. 7, 1905..	\$146 per annum..	463 33
Rivière Ouelle.	J. A. Gamache.	June 26, 1913..	25 per cent.	2 45
St. Alphonse de Bagotville.	T. Fortier	April 20, 1909..	\$48 per annum..	153 26
St. Irénée	G. Bouchard.	Feb. 10, 1903..	25 per cent.	157 49
St. Jean d'Orleans.	Vacant.			60 00
St. Laurent d'Orleans.	J. Godbout.	May 11, 1904..	50 per cent.	33 28
St. Nicholas.	Leased.		\$25 per annum..	50 00
St. Simon.	Elric Tremblay.	Mar. 7, 1913..	25 per cent.	26 57
St. Thomas de Montmagny	Raoul Fournier.	May 23, 1913..	25 "	61 51
Tadoussac.	A. Gingras.	May 29, 1906..	\$30 per annum..	129 00
				4,460 32

4 GEORGE V., A. 1914

REVENUE, minor Public Works—Wharfs, Piers and Harbours, for the year ended
March 31, 1913.—*Continued.*

Locality.	Wharfinger.	Date of appointment.	Remuneration allowed.	Amount.
<i>Ontario.</i>				\$ cts.
Blind River.....	W. H. McGauley.....	April 14, 1908..	50 per cent.....	438 88
Bronte.....	Thos. Joyce.....	Dec. 17, 1912..	25 ".....	41 25
Bruce Mines.....	W. Fleming.....	April 15, 1902..	25 ".....	92 25
Chute à Blondin.....	O. Cousineau.....	May 28, 1909..	40 ".....	105 33
Cockburn Island.....	D. J. McLeod.....	April 18, 1907..	25 ".....	8 30
Goderich.....	M. McDonald.....	Mar. 7, 1913..	25 ".....	131 25
Haileybury.....	J. P. Elston.....	Oct. 17, 1912..	25 ".....	455 72
Hilton.....	Peter Brown.....	Mar. 25, 1913..	50 ".....	175 27
Kingsville.....	W. H. Black.....	Aug. 1, 1902..	25 ".....	203 45
L'Original.....	Louis Tourangeau.....	May 22, 1912..	25 ".....	124 85
Leamington.....	J. E. Johnston.....	May 11, 1906..	25 ".....	313 89
Midland.....	Jno. Zates.....	Oct. 26, 1905..	25 ".....	307 51
North Bay.....	M. LeBoneff.....	Feb. 6, 1912..	50 ".....	97 47
Pelee Island.....	H. Henderson.....	Feb. 2, 1907..	25 ".....	370 07
Pembroke.....	T. Lowe.....	Mar. 7, 1913..	\$200 per annum.	6 80
Richards Landing.....	Jas. Brunnde.....	Mar. 16, 1912..	50 per cent.....	2 63
Rondeau.....	W. R. Fellows.....	Dec. 17, 1913..	25 ".....	27 72
Rosseau.....	S. A. Foote.....	April 17, 1912..	50 ".....	125 00
Sault Ste. Marie.....	G. A. Boyd.....	April 30, 1901..	\$100 per annum.	2,056 41
Sanders Wharf.....	Irwin Amck.....	April 5, 1911..	25 per cent.....	148 07
Shegnindah.....	Wm. Stephens.....	Nov. 8, 1910..	25 ".....	15 46
Silver Centre.....	Harry Pickering.....	July 17, 1911..	25 ".....	49 26
Southampton.....	H. Harmer.....	May 24, 1912..	25 ".....	167 38
South Lancaster.....	Jno. Munroe.....	Sept. 19, 1912..	25 ".....	9 24
Summerstown.....	A. Bonnerville.....	May 25, 1910..	25 ".....	11 95
Thessalon.....	W. H. Hill.....	Feb. 29, 1912..	50 ".....	105 99
Treadwell.....	R. Hughes.....	May 24, 1911..	50 ".....	69 11
Wendover.....	Morse St. Pierre.....	Feb. 20, 1913..	50 ".....	94 59
Wiarton.....	W. Gilbert.....	Nov. 13, 1907..	25 ".....	127 61
				5,882 71
<i>New Brunswick</i>				
Anderson's Hollow.....	Ira H. Copp.....	Feb. 21, 1913..	25 ".....	69 26
Campbellton.....	W. W. Doherty.....	Oct. 19, 1912..	25 ".....	1,453 84
Cape Tormentine.....	Joe. D. Lane.....	May 24, 1912..	25 ".....	527 31
Caraquet.....	Hypolite Foulem.....	June 26, 1912..	25 ".....	101 79
Dalhousie.....	W. S. Smith.....	June 27, 1891..	25 ".....	205 81
Gardens Creek.....	J. J. Armstrong.....	Dec. 22, 1909..	25 ".....	16 90
Hopewell Cape.....	L. Layton.....	Mar. 25, 1912..	25 ".....	55 59
Moncton.....	J. Flanagan.....	June 16, 1911..	25 ".....	115 49
Onaco.....	A. S. Vaughan.....	Nov. 5, 1912..	25 ".....	5 32
St. John.....	E. C. Elkin.....	Nov. 18, 1910..	25 ".....	10,004 33
Shippegan.....	G. J. Henry.....	May 24, 1911..	25 ".....	70 71
Tracadie.....	Lions Brean.....	Sept. 23, 1889..	25 ".....	5 54
Two Rivers.....	Jesse Knowlton.....	May 27, 1913..	25 ".....	5 18
				12,637 07
<i>Nova Scotia.</i>				
Arichat.....	D. H. Cutler.....	Mar. 21, 1912..	25 per cent.....	28 18
Avonport.....	L. F. Fuller.....		25 ".....	11 35
Babin's Cove.....	Jos. Benoit.....	June 25, 1912..	25 ".....	6 11
Barrington Passage.....	J. H. Christie.....	Aug. 31, 1896..	25 ".....	119 51
Barrington Head.....	W. H. Doane.....	June 29, 1910..	25 ".....	13 77
Bayfield.....	R. Grant.....	April 23, 1902..	50 ".....	24 20
Battery Point.....	Albert Ellis.....	April 3, 1912..	25 ".....	1 25
Belleveau Cove.....	S. C. Theriault.....	Nov. 24, 1892..	25 ".....	145 19
Black Point.....	E. W. Perry.....	Apr. 30, 1913..	25 ".....	22 58
Brooklyn.....	Jas. McLeod.....	Aug. 3, 1904..	25 ".....	68 55
Canada Creek.....	H. Dickey.....	Aug. 12, 1899..	25 ".....	8 39
Cape Cove.....	Benj. Doucette.....	Feb. 8, 1907..	25 ".....	25 78
Centreville.....	A. Ward.....	May 23, 1897..	25 ".....	64 74
Church Point.....	Deris Thibodeau.....	June 12, 1913..	25 ".....	66 72
Dey's Brook.....	J. C. W. Ditmare.....	Dec. 2, 1911..	25 ".....	8 64
Descousse.....	Annil Langlois.....	Aug. 26, 1912..	25 ".....	61 19
Digby.....	J. O. Dakin.....	Feb. 5, 1912..	25 ".....	4,203 37

SESSIONAL PAPER No. 21

REVENUE, minor Public Works—Wharfs, Piers and Harbours, for the year ended
March 31, 1913.—*Continued.*

Locality.	Wharfinger.	Date of appointment.	Remuneration allowed.	Amount.
<i>Nova Scotia—Con.</i>				\$ cts.
Freeport.....	J. L. Stevens	May 8, 1912..	25 per cent.....	57 39
Granville Centre.....	H. Rooney	July 6, 1903..	25 "	68 57
Hall's Harbour.....	J. C. Watson	Nov. 16, 1912..	50 "	13 20
Hampton	C. E. Dunn	Dec. 22, 1906..	25 "	31 00
Harbourville	Wm. Spicer	May 21, 1913..	25 "	54 03
Horton Landing	F. G. Curry	Apr. 30, 1898..	25 "	15 02
East Jeddore	E. Baker	May 9, 1910..	50 "	13 23
Jordan Bay	Jacob L. Jones	Nov 30, 1912..	25 "	28 75
Little River.....	Omer E. Denton.....	Feb. 3, 1912..	25 "	52 93
Margaretville	Wm. Early	Jan. 15, 1912..	25 "	100 61
Meteghan Cove.....	M. S. Robichaud.....	Dec. 7, 1909..	25 "	15 05
Meteghan River	A. Melanson	Sept. 26, 1910..	25 "	2 19
Morden	L. Barnaby.....	Mar. 7, 1913..	25 "	11 52
New Edinburgh.....	Chas. F. D'Eon.....	Apr. 3, 1912..	25 "	2 45
Oak Point.....	Leased to Dominion At- lantic Ry. Co		25 "	200 01
Ogilvie	J. L. Swindle.....	Mar. 4, 1907..	25 "	23 30
Picketts.....	F. Eaton	Aug. 2, 1899..	25 "	51 54
Plymton.....	W. K. Smith.....	Aug. 8, 1890..	25 "	9 84
Port George	Wm. Hayde	Dec. 13, 1912..	25 "	5 37
Port Hastings	Angus C. Fraser.....	Feb. 12, 1913..	25 "	12 56
Port Hawkerbury.....	F. McInnis.....	Mar. 20, 1907..	25 "	364 26
Port Latour	C. D. Cook	Aug. 20, 1907..	25 "	17 65
Port Lorne.....	F. Beardsley.....	June 22, 1897..	25 "	35 51
Port Morien.....	Wm. A. Brunn	Oct. 28, 1905..	25 "	65 47
Port Morton	Geo. Cook.....	Dec. 28, 1905..	25 "	2 81
Port Phillips.....	Chandler Smith.....	Jan. 17, 1913..	25 "	3 41
Port Wade.....	Edward H. Johns.	Apr. 3, 1912..	25 "	81 06
Poulamond	C. N. Pertus.....	Nov. 18, 1911..	25 "	78 50
Ray's Creek.....	R. W. Ray.....	Apr. 3, 1912..	25 "	8 81
Sandford.....	A. Shaw.....	May 26, 1903..	25 "	11 13
Saulsnerville	J. L. Saulsner	Aug. 25, 1888..	25 "	15 06
Shag Harbour	Jas. W. Smith.....	Dec. 13, 1912..	25 "	9 21
Spencer's Island.....	H. E. Grant.....	June 13, 1912..	25 "	18 34
Liveston.....	B. Blackford.....	Oct. 17, 1906..	25 "	57 59
West Arichat	Chas. Forrest.....	Feb. 22, 1913..	25 "	38 91
West Head.....	H. N. Newell	Feb. 7, 1910..	25 "	44 63
Westport	W. E. Kent.....	Sept. 16, 1912..	25 "	71 75
West Pubnico	L. J. Ormirault.....	May 21, 1913..	25 "	23 98
Wolfville.....	J. L. Franklin.....		25 "	24 89
				6,620 85
<i>Prince Edward Island.</i>				
Aitkins Ferry.....	Jas. M. Hewitt	Apr. 3, 1912..	25 per cent.....	2 03
Armandale.....	H. J. Howlett.....	Aug. 26, 1912..	25 "	82 21
Bay View.....	J. Harrington	Oct. 2, 1885..	25 "	8 58
Belfast.....	F. Halliday.....	May 1, 1901..	25 "	156 31
Chapel Point.....	R. H. McCormack.....	July 19, 1912..	25 "	11 26
Charlottetown.....	T. G. Taylor.....		25 "	689 69
China Point.....	W. S. N. Crane.....		25 "	44 33
Clifton.....	J. Gunn.....	May 4, 1900..	25 "	14 33
Craypond.....	Jas. Day.....	Sept. 30, 1912..	25 "	214 76
Georgetown	R. R. Jenkins.....	Oct. 14, 1892..	25 "	14 84
Creek River.....	Wm. Butler.....	April 24, 1911..	25 "	28 14
Haggerty's.....	Jno. Callaghan	June 25, 1912..	25 "	15 00
Hickey's	M. Webster.....	Oct. 20, 1896..	25 "	31 05
Higgin's Shore.....	H. Peever.....	May 16, 1913..	25 "	1 67
Hurds Point	Robt. Holland.....	May 21, 1913..	25 "	89 35
Kiers Shore	Wm. Hodgson.....	June 10, 1895..	25 "	146 26
Lambert Stevens.....	R. A. Johnstone.....	May 3, 1900..	25 "	40 67
Lewis Point.....	R. McCormack.....	Nov. 6, 1908..	25 "	10 23
Mount Stewart	Daniel Bert.....		25 "	62 19
McPherson's Cove.....	J. L. McPherson.....	Nov. 6, 1908..	25 "	4 88
Murray Harbour, North.....	B. Richards.....	Jan. 19 1909..	25 "	8 67

REVENUE, minor Public Works—Wharfs, Piers and Harbours, for the year ended
March 31, 1913.—*Concluded.*

Locality.	Wharfinger.	Date of appointment.	Remuneration allowed.	Amount.
<i>Prince Edward Island.</i>			p.c.	\$ cts.
North Cardigan.....	R. J. Steele.....	May 1, 1910..	25	54 40
Pownal.....	M. M. Haley.....	Oct. 13, 1896..	25	29 62
St. Mary's Bay.....	G. H. Hicken.....	June 11, 1910..	25	31 05
Tignish.....	Jos. E. Richard.....	Sept. 16, 1912..	25	7 79
Vernon River.....	Jno. Findlay.....	April 25, 1912..	25	112 38
Wood Island.....	Jas. Young.....	April 10, 1899..	25	0 56
				1,921 45
<i>Manitoba.</i>				
Selkirk	J. A. Hunt.. . . .	May 3, 1912..	25	503 90
<i>British Columbia.</i>				
Ladysmith	T. D. Conway... ..			3 75
Sydney Harbour.....	C. C. Cochrane.....	Nov. 25, 1910..	25	68 42
Stewart	A. N. Paterson....	Jan. 30, 1913..	25	13 90
				86 07

Resume of Wharfage.

Ontario.. . . .	\$ 5,882 71
Montreal District.. . . .	1 48716
Quebec District.. . . .	4,460 32
New Brunswick.. . . .	12,637 07
Nova Scotia.. . . .	6,620 85
Prince Edward Island.. . . .	1,921 45
Manitoba.. . . .	503 90
British Columbia.. . . .	26 07
	\$33,599 53

Resume of Dues.

St. John's.. . . .	\$ 126 50
Sorel.. . . .	138 00
Sydney.. . . .	43 50
Camox.. . . .	4 00
Nanaimo.. . . .	73 00
Vancouver.. . . .	450 50
Victoria.. . . .	288 50
	\$ 1,124 50

SESSIONAL PAPER No. 21

SICK Mariners' dues, collected during the fiscal year ended March 31, 1913.

Name of Port.	Amount.	Name of Port.	Amount.
<i>Quebec.</i>		<i>Nova Scotia—Con.</i>	
	\$ cts.		\$ cts.
Gaspé.. . . .	44 24	Middleton.. . . .	0 45
Montreal.. . . .	6,322 28	North Sidney.. . . .	1,100 27
Paspébiac.. . . .	235 85	Parrsboro.. . . .	836 48
Percé.. . . .	40 87	Pictou.. . . .	106 86
Quebec.. . . .	7,068 27	Port Hawkesbury.. . . .	97 40
Rimouski.. . . .	231 71	Port Hood.. . . .	15 05
St. John's.. . . .	1,359 34	Shelburne.. . . .	75 63
Sorel.. . . .	18 41	Sydney.. . . .	4,209 34
Three Rivers.. . . .	242 86	Truro.. . . .	3 83
Total.. . . .	\$15,563 83	Weymouth.. . . .	137 07
		Windsor.. . . .	1,243 56
		Yarmouth.. . . .	405 69
		Total.. . . .	\$24,430 81
<i>New Brunswick.</i>		<i>British Columbia.</i>	
Bathurst.. . . .	\$ 176 70	Nanaimo.. . . .	\$ 3,636 56
Campbelton.. . . .	256 50	New Westminster.. . . .	118 82
Chatham.. . . .	806 30	Prince Rupert.. . . .	392 91
Dalhousie.. . . .	563 42	Vancouver.. . . .	3,003 77
Fredericton.. . . .	33 43	Victoria.. . . .	6,692 78
Moncton.. . . .	332 34	Total.. . . .	\$13,844 84
Newcastle.. . . .	488 97		
Sackville.. . . .	125 40	<i>Prince Edward Island.</i>	
St. Andrews.. . . .	70 76	Charlottetown.. . . .	\$ 240 20
St. John.. . . .	6,910 15	Summerside.. . . .	83 27
St. Stephen.. . . .	56 18	Total.. . . .	\$ 323 47
Total.. . . .	\$ 9,820 15		
<i>Nova Scotia.</i>		<i>Grand Total of the Provinces.</i>	
Amherst.. . . .	\$ 333 45	Quebec.. . . .	\$15,563 83
Annapolis Royal.. . . .	222 61	New Brunswick.. . . .	9,820 15
Antigonish.. . . .	0 70	Nova Scotia.. . . .	24,430 81
Arichat.. . . .	14 46	British Columbia.. . . .	13,844 84
Baddeck.. . . .	98 94	Prince Edward Island.. . . .	323 47
Bridgewater.. . . .	266 57	Grand total.. . . .	\$63,983 10
Canso.. . . .	121 56		
Digby.. . . .	108 36		
Glace Bay.. . . .	1 51		
Halifax.. . . .	15,108 50		
Kentville.. . . .	12 53		
Liverpool.. . . .	74 87		
Lockeport.. . . .	12 49		
Lunenburg.. . . .	305 76		

SESSIONAL PAPER No. 21

HARBOUR MASTERS.

TABLE showing the names of ports proclaimed under certain Dominion Acts, the provision of which are found in the Canada Shipping Act, Chapter 113, Revised Statutes of Canada, 1906, for the appointment of harbour masters and date of their appointment, the amount which each of their salaries is not to exceed, the amount of fees collected by each of them during the calendar year ended December 31, 1912, and the overplus, if any, paid to the credit of the Receiver General.

PROVINCE OF ONTARIO.

Name of Port.	Harbour Master.	Date of appointment.	Amount collected.	Remuneration allowed.	Amount paid to Cr. R. G.
			\$ cts.	\$ cts.	\$ cts.
Amherstburg.	Geo. Gott.	May 13, 1912	Nil.	200 00	
Bronte.	Thos. Joyce.	Dec. 17, 1912	Nil.	200 00	
Byng Inlet.	H. L. Graswell.	Feb. 20, 1912	Nil.	200 00	
Collingwood.	Wm. Francis Toner.	Dec. 1, 1908	48 50	300 00	
Depot Harbour.	A. F. Butterworth.	April 14, 1913	5 50	200 00	
Fort William.	Jas. McCallum.	May 12, 1906	292 50	600 00	
French River.	Dean Ndy.	Mar. 25, 1912	Nil.	200 00	
Goderich.	Malcolm McDonald.	April 17, 1912	31 50	300 00	
Little Current.	W. D. Ritchie.	April 3, 1912	193 00	200 00	
Meaford.	Wm. Cooke.	July 1, 1913	Nil.	200 00	
Midland.	Jno. White.	July 13, 1897	Nil.	300 00	
Owen Sound.	W. H. Smith.	April 25, 1912	85 50	200 00	
Oshawa.	Wm. T. Henry.	Aug. 10, 1904	Nil.	200 00	
Parry Sound.	Basil Taylor.	Aug. 27, 1909	Nil.	200 00	
Penetanguishene.	Peter Light.	May 7, 1906	14 00	200 00	
Port Arthur.	B. Guirard.	May 21, 1897	155 00	300 00	
Port McNicoll.	Thos. Nottingham.	May 1, 1911	32 00	200 00	
Port Stanley.	T. R. Dale.	Aug. 13, 1912	Nil.	200 00	
Rondeau.	W. R. Fellows.	Dec. 17, 1888	27 50	100 00	
Southampton.	W. H. Johnston.	Oct. —, 1882	19 00	100 00	
Sarnia.	Robt. McAdam.	May 3, 1886	Nil.	300 00	
Trenton.	Jos. Coutts.	May 13, 1912	24 50	200 00	

PROVINCE OF QUEBEC.

Amherst.	Jno. Cassidy.	Sept. 2, 1878	12 00	200 00	
Anse aux Gascons.	Jno. Mourant.	June 28, 1905	Nil.	100 00	
Bersimis.	Faurent Thibault.	Dec. 13, 1905	Nil.	200 00	
Bic.	Ferdinand Bellavance.	April 25, 1912	3 00	200 00	
Bonaventure.	Alexandria Bourque.	June 5, 1905	17 50	100 00	
Carleton.	Bernard Leclerc.	May 15, 1905	Nil.	200 00	
Cape Cove.	R. J. Lenfesty.	June 7, 1912	Nil.	200 00	
Caplin.	Theo. Bourdages.	Mar. 20, 1907	Nil.	100 00	
Chicoutimi.	A. Sturton.	June 8, 1886	Nil.	200 00	
Grand Entry.	Andre Cyr.	July 10, 1907	Nil.	100 00	
Escoumains.	C. J. Belanger, jr.	Oct. 27, 1906	Nil.	200 00	
Grand River.	Geo. Belliveau.	April 25, 1912	Nil.	100 00	
Gaspé.	F. J. Eden.	April 3, 1889	Nil.	500 00	
House Harbour.	C. Lafrance.	Dec. 10, 1896	20 00	200 00	
Maria.	Arthur Cyr.	Mar. 29, 1905	Nil.	100 00	
Matane.	Jos. Levesque.	Jan. 20, 1912	Nil.	200 00	
Malbay.	Jno. Thompson.	May 27, 1913	14 00	200 00	
Metis.	J. W. Ferguson.	May 10, 1906	Nil.	200 00	
New Carlisle.	Jno. Chisolm.	April 22, 1902	2 50	200 00	

TABLE showing the names of ports proclaimed under certain Dominion Acts.—*Con.*

PROVINCE OF QUEBEC—*Concluded.*

Name of Port.	Harbour Master.	Date of Appointment.	Amount collected.	Remuneration allowed.	Amount paid to Cr. R. G.
			\$ cts.	\$ cts.	\$ cts.
New Richmond.....	F. X. Cormier	April 15, 1902	30 00	200 00	
Nouvelle ..	Jas. Casey.....	Jan. 3, 1903	9 00	200 00	
Oak Bay	Thos. Hayser.....	July 12, 1904	50 00	200 00	
Paspébiac.	W. T. Kempffer.....	Sept. 21, 1900	31 50	150 00	
Perce.	E. Donohue	Oct. 10, 1903	Nil.	100 00	
Port Daniel.....	Benj. Langlais.....	Feb. 26, 1907	30 00	200 00	
Rimouski ..	A. P. St. Laurent.....	May 31, 1896	51 00	200 00	
Rivière du Loup.....	F. E. Gilbert.....	Oct. 5, 1902	20 00	100 00	
St. Godfrey.....	Jacques Guniex.....	June 5, 1905	Nil.	100 00	
Montmagny.....	Raoul Fournier.....	May 23, 1913	16 50	200 00	
St. Johns.	G. J. H. Farrer.....	Mar. 20, 1897	726 50	600 00	126 50
Sault au Mouton	Chas. E. Nolet.....	April 11, 1907	Nil.	200 00	
Sorel.	J. A. Proulx.....	June 6, 1901	638 00	500 00	138 00
Trois Pistoles.....	Octave Drapeau.....	Nov. 25, 1911	Nil.	100 00	
Tadousac.	August Gingras.....	June 6, 1906	Nil.	200 00	

PROVINCE OF NEW BRUNSWICK.

Alma ..	G. W. Parson.....	Mar. 2, 1898	57 50	100 00	
Back Bay.....	Harry Wm. Harrer.....		Nil.		
Baie Verte.....	Chas. Tremholme.....		Nil.		
Bathurst	Michael Daly.....	Apr. 15, 1907	44 00	200 00	
Black's and Beaver Harbour	E. W. Cross.....	Sept. 17, 1883	Nil.	100 00	
Buctouche	H. Hutcheson.....	April 17, 1897	Nil.	100 00	
Campbelton.	G. E. Aker.....		Nil.	200 00	
Campobello	H. Calder.....	April 25, 1912	11 00	100 00	
Cape Bald	Jos. L. Cormier.....	Aug. 19, 1911	Nil.	200 00	
Cape Tormentine.....	N. S. Treene.....	May 13, 1901	35 00	200 00	
Chatham..	R. J. Walls.....	July 13, 1898	185 00	300 00	
Cocagne	J. T. Bourque.....	June 23, 1905	Nil.	100 00	
Dalhousie..	W. S. Smith.....	Mar. 19, 1888	109 00	200 00	
Dorchester.....	Jas. Shea	Oct. 25, 1900	66 00	200 00	
Fairhaven.....	A. Calder	July 30, 1901	4 00	200 00	
Grand Harbour..	Turner Ingolls.....	April 19, 1907	3 50	100 00	
Grand Manan.....	A. H. Cheney.....		Nil.		
Gull Rock Channel	Geo. A. Johnston.....	April 27, 1904	Nil.	100 00	
Woodward Cove Harvey...	Wm. Wood.....	June 9, 1903	25 00	100 00	
Heron Channel.....	Geo. M. Taylor.....	Nov. 25, 1911	38 00	200 00	
Hillsborough	Jas. Gallagher.....	June 26, 1912	Nil.	100 00	
Hopewell Cape ..	Jno. N. Christopher.....	April 13, 1898	7 00	200 00	
Ledge of St. Stephens.....	Wm. McBean.....	June 12, 1894	Nil.	100 00	
Tête.....	H. W. Harris.....	Feb. 16, 1908	Nil.	100 00	
Little Shippegan	Jos. Beaudin.....	Oct. 27, 1906	Nil.	100 00	
Moncton.....	Jas. Flannagan.....	June 13, 1897	7 50	200 00	
Musquash.....	J. McNulty.....	Sept. 28, 1896	Nil.	100 00	
New Castle	Jno. Russell.....	June 27, 1904	Nil.	300 00	
North Head.....	J. E. Caskill.....	Mar. 20, 1907	7 00	100 00	
Port Elgin.....	C. Trenholm.....	April 30, 1907	Nil.	200 00	
Pokemouche	M. Landry.....		Nil.	100 00	
Richibucto.....	Jas. A. Jardine.....	May 11, 1874	13 00	200 00	
Sackville.....	E. Chase	May 11, 1904	10 00	200 00	
Seal Cove.....	Wm. Russell	Feb. 22, 1913	17 00	100 00	
St. Andrews	Wm. Clarke.....	Feb. 16, 1909	55 50	100 00	
St. George.....	Allan Stewart.....	April 3, 1912	51 00	100 00	
St. Stephen.....	Andrew McWha.....		42 00		
St. Martin's.....	Alfred Vaughan.....	Nov. 1, 1912		100 00	
Shediac.....	R. H. Welling.....	May 24, 1911		300 00	
Shippegan	C. Gionet.....		Nil.	100 00	
Tracadie.....	Michael Sonier.....	April 19, 1912	Nil.	100 00	
Waterside.....	Ira H. Copp	Feb. 2, 1913	12 50	100 00	
West Isles.....	B. Simpson.....	May 27, 1901	Nil.	200 00	
Whitehead.....	A. Cheney	April 19, 1907	4 00	100 00	

SESSIONAL PAPER No. 21

TABLE showing the names of ports proclaimed under certain Dominion Acts.—*Con.*

PROVINCE OF NOVA SCOTIA.

Name of Port.	Harbour Master.	Date of appointment.	Amount collected.	Remuneration allowed.	Amount paid to Cr. R. G.
			\$ cts.	\$ cts.	\$ cts.
Abbott's Harbour.....	F. D. Entrement.....	May 23, 1901	Nil.	200 00	
Advocate Harbour.....	R. D. Atkinson.....	May 2, 1913	14 50	100 00	
Amherst.....	V. S. Tait.....	Sept. 30, 1912	4 00	300 00	
Annapolis.....	Jno. Lindgun.....	July 7, 1998	53 50	200 00	
Apple River.....	Wallace Green.....	May 24, 1911	Nil.	200 00	
Arichat.....	Jno. Langlais.....	May 22, 1909	22 50	200 00	
Baddeck.....	P. L. McFarlane.....	Mar. 6, 1909	Nil.	100 00	
Barrington.....	B. Kenny.....	July 6, 1893	20 50	200 00	
Bayfield.....	David Sutton.....	May 22, 1910	1 50	200 00	
Bay St. Lawrence.....	Jas. W. Fitzgerald.....	Dec. 22, 1910	Nil.	200 00	
Bear River.....	Wm. McFadden.....	Sept. 27, 1897	31 00	100 00	
Big Harbour.....	Dan McKenzie.....	April 18, 1908	Nil.	160 00	
Beaver Harbour.....	H. Hawbott.....	Sept. 22, 1888	5 00	100 00	
Belliveau Cove.....	F. LeBlanc.....	Dec. 6, 1912	Nil.	200 00	
Bridgewater.....	W. Oakes.....	Jan. 28, 1896	128 00	200 00	
Big Pond.....	Michael McIsaac.....	Mar. 8, 1906	Nil.	200 00	
Canning.....	F. A. McBride.....	Jan. 18, 1913	Nil.	200 00	
Cape Canso.....	Geo. Oliver.....	Feb. 14, 1905	90 50	150 00	
Cape Negro.....	A. D. Perry.....		3 50	200 00	
Chaboque.....	W. Jenkins.....	Sept. 28, 1912	Nil.	200 00	
Chester.....	A. C. Corkum.....	July 8, 1896	11 50	100 00	
Cheticamp.....	E. Aucoin.....	April 15, 1876	6 50	160 00	
Clark's Harbour.....	J. G. Nickerson.....		51 50	200 00	
Clementport.....	J. McCain.....	Oct. 19, 1898	3 50	150 00	
D'Escous.....	Annie Langlais.....	Dec. 23, 1911	7 50	100 00	
Digby.....	H. Anderson.....	June 19, 1902	52 50	200 00	
Fourchie.....	A. B. Hooper.....		Nil.	100 00	
Freeport.....	Fred H. Prince.....	May 2, 1912	Nil.	200 00	
Gabarus.....	Geo. Harris.....	Feb. 22, 1911	Nil.	100 00	
Glasgow.....	A. McQuerrie.....	Oct. 30, 1880	74 50	300 00	
Guysboro.....	Thos. O'Connor.....	April 2, 1913	3 00	100 00	
Halifax.....	F. J. Rudolph.....	May 13, 1910	1,858 50	1,800 00	58 50
Hall's Harbour.....	J. C. Watson.....	Nov. 16, 1912	Nil.	100 00	
Hantsport.....	Wm. McCulloch.....	Jan. 17, 1892	128 00	300 00	
Ingonish N. Bay.....	Angus McLean.....	April 21, 1910	Nil.	200 00	
" S. "	J. C. Williams.....	Nov. 25, 1912	Nil.	100 00	
Ingram River.....	Eugene Huntly.....	Jan. 19, 1907	57 00	100 00	
Sydney.....	M. J. Neville.....	Oct. 30, 1880	343 50	300 00	43 50
Isaacs Harbour.....	F. C. Cook.....	June 15, 1900	15 00	100 00	
Jeddore.....	Jas. E. Jennox.....	Aug. 16, 1912	Nil.	100 00	
Joggin's Mines.....	Anthony Brine.....	Jan. 2, 1913	Nil.	200 00	
Jordan Bay.....	F. Thompson.....	May 11, 1901	7 00	150 00	
Kelley Cove.....	Judah Kenny.....	April 6, 1908	Nil.	100 00	
LeHave.....	G. H. Zwicker.....	Feb. 25, 1875	46 00	300 00	
L'Ardoise.....	Geo. Burke.....	Aug. 25, 1884	Nil.	100 00	
Liscomb.....	L. Wilson.....	Feb. 20, 1900	7 50	200 00	
Gillis Point F.....	D. J. Campbell.....	April 17, 1899	Nil.	100 00	
Little Bras D'Or H.....	Jno McLellan.....	Oct. 9, 1909	Nil.	200 00	
Little Bras D'Or L.....	Vincent McLean.....	Sept. 23, 1907	Nil.	100 00	
Litle Glace Bay.....	E. Douglas Rigby.....	May 8, 1884	12 50	200 00	
Little Narrows.....	Malcolm Matheson.....	Sept. 6, 1912	Nil.	100 00	
Liverpool.....	W. G. Hameon.....	Jan. 3, 1912	133 50	200 00	
Lockeport.....	Geo. J. Locke.....	April 2, 1906	Nil.	100 00	
Louisburg.....	Roderick D. Carr.....	Aug. 26, 1912	80 00	200 00	
Mabou.....	J. Heckman.....	Oct. 1, 1909	180 00	200 00	
Lunenburg.....	J. McInnis.....	July 11, 1900	1 00	100 00	
Mahone Bay.....	Aaron Hyson.....	Feb. 18, 1908	24 50	200 00	
McNaire Cove.....	R. McEachern.....	March 8, 1875	Nil.	150 00	
McKinnon Harbour.....	D. Z. McNeil.....	Oct. 9, 1909	Nil.	200 00	
Marble Mountain.....	D. McDonald.....	July 26, 1892	Nil.	200 00	
Margaretville.....	Jas. Cleveland.....	Nov. 5, 1912	Nil.	100 00	
St. Margaret's Bay.....	H. C. Harrison.....	Dec. 14, 1901	4 50	100 00	
Margaree.....	Fred P. Chasson.....	Mar. 6, 1909	Nil.	100 00	
Marie Joseph.....	Chas. Dixon.....	Feb. 2, 1907	1 50	100 00	
Merigonish.....	T. B. Olding.....	Mar. 11, 1910	Nil.	200 00	

TABLE showing the names of ports proclaimed under certain Dominion Acts.—*Con.*
PROVINCE OF NOVA SCOTIA—*Concluded.*

Name of Port.	Harbour Master.	Date of Appointment.		Amount collected.	Remuneration allowed.	Amount paid to Cr. R. G.
				\$ cts.	\$ cts.	\$ cts.
Meteghan Harbour.....	Jno. McLain	Nov.	17, 1906	6 50	100 00	
" River.....	Luke A. Comeau.....	June	1, 1897	Nil.	100 00	
Musquodoboit.....	Thomas Williams.....	May	31, 1905	Nil.	100 00	
New Haven.....	Hector A. McLeod.....	Aug.	17, 1889	Nil.	100 00	
Neils Harbour.	Ruben Payne.	July	15, 1905	3 50	100 00	
Noel	J. B. O'Brien.	Apr.	7, 1913	6 50	200 00	
Northport.....	J. Davis.....	Dec.	21, 1902	4 50	100 00	
North West Cove.....	Albert Setter.....	May	22, 1912	Nil.	200 00	
Parrsboro.....	W. R. Huntley	May	8, 1912	50 00	300 00	
Petit de Grat.....	Elias Bois	Feb.	9, 1912	13 00	200 00	
Pictou	Harbour Commissioners.				300 00	
Petite R. Bridge	Jos. Nelson Parks.....	April	27, 1888	2 00	100 00	
Port Greville.....	Duston Graham.	April	27, 1909	24 00	200 00	
Port Hawkesbury	Jno. Lainey	June	2, 1909	157 00	200 00	
Port Hastings.....	Geo. McLean.....	Feb.	15, 1908	140 50	200 00	
Port Hood.....	J. H. Murphy.....	July	9, 1875	2 50	200 00	
Port La Tour.....	Wm. Sholds.....	Feb.	8, 1898	4 50	200 00	
Port Lorne	F. Beardley	June	9, 1907	Nil.	200 00	
Port Maitland.....	J. S. Keddie.....	Dec.	10, 1896	Nil.	200 00	
Port Morien.....	H. McDonald.....	Mar.	1, 1879	1 50	400 00	
Port Mulgrave.....	Jos. Moore	Jan.	20, 1912	19 00	200 00	
Port Medway	J. Hoppins.....	Feb.	13, 1903	7 00	200 00	
Port Wade.....	Abraham Homes.....	Dec.	10, 1912		200 00	
Pubnico	Peter Belliveau.....	Nov.	25, 1911	46 00	100 00	
Pugwash	Peter Stewart.....	Mar.	17, 1912	42 00	100 00	
Ritcey's Cove or River Port	F. J. C. Creaser	June	8, 1901	41 50	100 00	
River Bourgeois.....	E. C. Bouchie	April	9, 1886	2 00	100 00	
River Hebert	W. Y. Theal.....	July	24, 1905	22 00	100 00	
River John.....	H. Campbell.....	June	1, 1891		100 00	
St. Ann's Bay.....	D. McAskill.....	May	2, 1913		200 00	
St. Mary's R.	Robt. Quinn.....	June	21, 1909	11 00	200 00	
St. Peter's Harbour.....	P. McNeil.....	Sept.	13, 1883	68 00	200 00	
St. Ann's Harbour	Alex. McLeod	April	16, 1909		200 00	
Sambro	Simon L. Grey.....	Feb.	18, 1912		200 00	
Sheet Harbour.....	Patrick Coady.....	Aug.	5, 1912		200 00	
Shelburne.....	Matthew Jordan.....	May	13, 1912	66 00	200 00	
Ship Harbour	H. Steman.....	Feb.	22, 1911	4 00	100 00	
Spencer's Island.....	B. McLellan	May	22, 1899	12 50	100 00	
Tangier	Alex. Mason.....	July	19, 1912	11 00	200 00	
Tenny Cape.....	Wm. Stephen.....	Sept.	16, 1912		200 00	
Tatamagouche.....	Wm. Reilly.....	June	1, 1900		200 00	
Tidnish	R. B. Davidson.....	Feb.	19, 1900		100 00	
Tiverton	J. Blackford.....	April	3, 1900	7 25	100 00	
Torbay.....	I. Fougere.....	Aug.	25, 1903	14 50	200 00	
Tusket.....	C. Doucette	Nov.	21, 1902		100 00	
Tusket Wedge	Henry A. LeBlanc.....	Mar.	3, 1911	36 00	100 00	
Victoria Piers Bar	Va ant.....					
Wallace	J. D. Potter.....	Feb.	14, 1896	1 00	100 00	
West Arichat.....	L. Forest.	May	25, 1910		100 00	
Walton J. W. Wein.		Nov.	25, 1911	40 50	200 00	
West Bay.....	Vacant.....				200 00	
Westport.....	W. B. Welch	Dec.	21, 1912		200 00	
Weymouth.....	Alex. Beaton.....	Mar.	11, 1912		200 00	
White Head.....	Levi Munroe.....	Feb.	8, 1909			
Whycocomagh	Vacant.....					
Windsor.....	C. W. Baird	April	10, 1912	123 50	300 00	
Wolfville.....	J. L. Franklin.....			3 00	100 00	
Woods Harbour.....	John Orechia.....	Feb.	19, 1892	15 00	200 00	
Yarmouth	G. L. Whetmore.....	Jan.	24, 1911	190 50	250 00	
Washabuck	Vincent McLean.....					
Yarmouth.....	K. M. Ferguson.....	April	27, 1912		250 00	

SESSIONAL PAPER No. 21

TABLE showing the names of ports proclaimed under certain Dominion Acts.—*Conc.*
PROVINCE OF PRINCE EDWARD ISLAND.

Name of Port.	Harbour Master.	Date of appointment.	Amount collected.	Remuneration allowed.	Amount paid to Cr R. G.
			\$ cts.	\$ cts.	\$ cts.
Alberton	Albert Kinch	July 19, 1912		200 00	
Bay Fortune	J. R. Coffin	Apr. 29, 1875		200 00	
Bendenell.....	J. A. Gordon	Oct. 26, 1905		200 00	
Cardigan River.....	D. J. McKenzie	June 14, 1913		100 00	
Cove Head.....	M. Kielley	Apr. 23, 1904		100 00	
Charlottetown.....	Jos. Ryan	May 3, 1912	144 50	400 00	
Crapaud	W. Myers	June 17, 1874		200 00	
Egmont Bay.....	H. Reeves.....	May 16, 1913	1 00	200 00	
Georgetown.....	S. Hemphill	Dec. 17, 1912		200 00	
Grand River	I. Howlett.....	Aug. 26, 1912		200 00	
Malpeque	J. Champion.....	Dec. 10, 1896		200 00	
Miminegash.....	Chas. Thibodeau.....	May 3, 1912		100 00	
Montague Bridge.....	A. Stewart	Apr. 24, 1913	5 00	200 00	
Murray Harbour.....	Geo. McLeod.....	Feb. 9, 1897	5 50	200 00	
Murray River	Geo. McLeod.....	Jan. 19, 1907	1 00	200 00	
New London	John Matheson	Sept. 17, 1912	1 00	200 00	
Pinette	J. D. McDonald.....	Oct. 28, 1903	0 50	100 00	
Port Hill	W. C. Brown	June 20, 1898		200 00	
Pownal	M. Haley.....	Mar. 30, 1897		100 00	
Rustico.....	J. Gallant	July 27, 1912		200 00	
St. Peters Bay.....	Geo. Barry.....	May 3, 1901		200 00	
Souris E. & W	Jos. Tierney	May 15, 1905	46 00	200 00	
Summerside	John Matheson	Feb. 8, 1907	48 00	200 00	
Tignish	Jos. E. Richard	Aug. 16, 1912		100 00	
Tracadie (Grande)	Jas. McAuley	Apr. 18, 1910		200 00	
Vernon River Bridge	J. Findlay	Oct. 9, 1884		200 00	
Wood Island.....	Jas. Young.....	May 22, 1899		100 00	

PROVINCE OF BRITISH COLUMBIA.

Chemainus.....	Lewis G. Hill.....		37 00	200 00	
Comox.....	Geo. H. Rowe.....		204 00	200 00	4 00
Ladysmith	Iro. E. Lowe	June 26, 1912	100 00	200 00	
Nanaimo and Departure Bay.....	Jas. Knarston	Oct. 26, 1905	573 50	500 00	73 50
New Westminster.....	W. B. Shiles.....	Feb. 15, 1908	207 00	400 00	
Snug Harbour.....	J. W. Davies	Apr. 18, 1910	3 00	200 00	
Vancouver	Capt. D. A. McInnis....	June 22, 1909	866 50	600 00	266 50
Victoria and Esquimault...	C. E. Clarke.....	Nov. 3, 1894	888 50	600 00	288 50
Prince Rupert.....	Capt. Edwin McCroskie.	Mar. 16, 1912	200 00	600 00	

APPENDIX No. 7.

METEOROLOGICAL OFFICE.

METEOROLOGICAL OFFICE,

TORONTO, May 23, 1913.

SIR,—I have the honour to submit the forty-second annual report of the Meteorological Service, this report being for the fiscal year ended March 31, 1913, with Appendices A and B, reports of the observations at St. John, N.B., and Quebec.

For various duties in connection with the Meteorological Service during the fiscal year ended March 31, 1913, 304 persons were in receipt of remuneration; of this number thirty-five were employed in the central office. Reports for varying periods have been received from 577 stations in the Dominion, Newfoundland, and Bermuda. At forty-five points where the observers are paid salaries, observations are taken and telegraphed twice daily to Toronto; forty-one of these places are supported by the Dominion Government and four by the Government of Newfoundland, working in co-operation with the Meteorological service. At ninety-seven points, chiefly in outlying districts, observations of a more or less extended character are taken, and the observers receive some remuneration. Special observations during the crop season were collected by telegraph from thirty-one points in the western provinces and three in British Columbia, and together with the reports from the telegraph stations from Port Arthur, and with a bulletin from Toronto, were incorporated and issued as a daily report for the benefit of the public in the western provinces. Remuneration was allowed for this work. Storm signals were displayed at 111 places throughout the Dominion and at four in Newfoundland, remuneration being allowed the display agents.

The work of the Meteorological Service has progressed satisfactorily during the year. The international weather map is, as it is becoming better understood, proving of much assistance in maintaining the efficiency of the forecasts and storm warnings.

The increasing number of inquiries from all portions of the Dominion for the regular and special forecasts, as well as for the statistics of climate, show that the people of this country appreciate the facilities for information which it is the aim of the service to maintain. Many inquiries have come from other countries also, especially from intending immigrants, and from various firms intending to open branch offices or factories in this Dominion.

The Newfoundland forecasts were cabled twice daily throughout the year, and no less than forty-two (42) storm warnings were issued, covering 159 stations. The work since its inception in February, 1910, has been eminently successful, and the inhabitants from one end of that country to the other are unstinted in their praises of the service. This is, of course, very gratifying, and especially so to the members of the Forecast Division, who uncomplainingly perform the onerous and greatly increased work entailed.

Arrangements have been made with the Printing Bureau so that the publications of the service will in future be issued with great despatch.

The signal structure at Tadousac was completed, and a new station at Mont Louis opened. Two thousand two hundred and ninety-six storm warnings were issued from the central office during the fiscal year, and of these 95.2 per cent were justified by

SESSIONAL PAPER No. 21

subsequent high wind velocities; 401 warnings were received late, 212 owing to issue, and 189 to delay in transmission.

Changes in observers at the telegraph stations took place at Dawson, Calgary, Swift Current, and White River, and there were also numerous changes at the storm signal display stations. In the central office, Mr. F. G. Spiller, printer, resigned and was succeeded by Mr. Irwin; Mr. P. G. Kerr was appointed to a clerkship; Mr. D. Urquhart, operator, and Mr. Basil Cody, mechanical assistant. Mr. W. F. Davidson, one of the oldest members of the staff died towards the close of the fiscal year.

Officers of the inspectional division visited the following stations during the year, making the necessary adjustments, giving instructions, etc.:—

Port Hope, Cobourg, Deseronto, Burlington Beach, Port Colborne, Port Dalhousie, Welland, St. Catharines, White River, Oakville, Port Credit, Edmonton, Battleford, Prince Albert, Saskatoon, Regina, Qu'Appelle, Moosejaw, Swift Current, Medicine Hat, Lethbridge, Macleod, Calgary, Banff, Kamloops, Vancouver, Dawson, Coldwater, Midland, Collingwood, Meaford, Owen Sound, Wiarton, Tobermory, Southampton, Kincardine, Point Clark, Goderich, Bayfield, Father Point, Haileybury, Cochrane, Stonecliffe, Montreal, Quebec, Newport Point, Grand Pabos, Grand River, Cape Cove, Perce, Corner of the Beach, Barachois de Mal Baie, Point St. Peter, Mont Louis, Caraquet, Chatham, Halifax, Sydney, Ashcroft, 141 Mile House, Cariboo Trail, Quesnel, Fort George, Barkerville, Woodstock, Wolfville, Fort William, Port Arthur and Winnipeg.

The inspection of stations is very necessary to maintain the efficiency of the work performed, both in ensuring that instruments are kept in proper adjustment and that the agents are performing their work in accordance with the regulations, and in uniform manner in all parts of the country. It should also be imperative that an officer of the service inspect localities where it is desired to have stations established.

The Statistical branch of the head office was somewhat reorganized, new forms of record being introduced, and slightly different methods adopted, by which it is expected that the issue of the publications will be expedited.

The following observing stations have been opened since my last report:—

BRITISH COLUMBIA.

Class	II	Nakusp.....	R. H. LaRue.
"	II	Hydraulic	S. Brooks.
"	II	Keremeos	Wm. Frith.
"	II	Kaslo	J. H. Stubbs.
"	III	Wycliffe	C. B. Staples.
"	II	Nanoose	R. Butler.
"	III	The Barrière Valley.....	D. F. Foxwell.
"	II	Creston.....	G. B. Henderson, M.D.
"	II	Clo-oose	L. C. J. Doerr.
"	III	Rock Creek.....	W. J. Anderson.
"	II	Howser.....	J. S. Hincks.
"	II	Pemberton Meadows.....	John Ronayre.
"	II	Fort George.....	W. R. Gordon.
"	II	Ashcroft.....	R. L. Reeves.
"	III	Lumby.....	A. H. Horner.
"	II	Terrace	H. M. Macpherson.
"	III	Invermere	Basil G. Hamilton.
"	II & S.	Harper Ranch (Experimental Station). . .	L. F. Stobart.
"	II	Departure Bay.....	C. McLean Fraser.
"	II	Tappen.....	J. Woollatt.
"	II	Richlands.....	W. F. Darrow.
"	II	Waneta.....	A. J. Slater.

ALBERTA.

Class	III	La Pearl.....	R. E. Adams.
"	II	Oyen.....	W. R. Meacham.
"	II	Coronation	Stanley C. Brown.
"	III	Nanton.....	John Smith.
"	II	Strathmore	C.P.R. Demonstration Farm.
"	II	Ber y Creek	T. H. Smith.
"	III	Lethbridge.....	L. A. Felger.

4 GEORGE V., A. 1914

ALBERTA—*Concluded.*

"	III	Cowley.....	Cecil Elton.
"	III	Coleman.....	Prudent LeGal.
"	III	Claresholm.....	Mrs. Mary E. Hart.
"	II	Mountain View.....	John Bird.
"	II	Beaver Mines.....	D. A. Smith.
"	II	Waterton Mills.....	H. H. Hanson.
"	II	Clemens.....	T. E. Lee.
"	II	Wastena.....	E. B. Talmage.
"	III	Coutts.....	Corporal A. P. White, R.N.W.M.P.

SASKATCHEWAN.

Class	III	Aberfeldy.....	C. E. Thomas.
"	III	The Meadows, Middle Forks (Battle Creek).....	R. H. Wright.
"	II	St. Walburg.....	James McGuire.
"	II	Buchanan.....	P. Livingston.

MANITOBA.

Class	II	Boissevain.....	J. S. Bush.
"	II	Souris.....	Rev. H. Cawley.

ONTARIO.

Class	II	Markdale.....	H. C. Duff.
"	II	Windham Centre.....	Newton H. Brown.
"	III	Hillier.....	N. Gordon.
"	III	Brantford (Bow Park).....	W. G. Spalteholz.
"	II	Norwood.....	E. S. Hopkins, B.S.A.
"	II	Listowel.....	Thomas Male.
"	II	Oshawa.....	Prof. W. J. Blake.
"	II	Dutton.....	C. W. Buchanan.
"	II	Sandy Falls (Timmins).....	H. E. Mueller.
"	II	Iroquois Falls.....	Abitibi Pulp and Paper Co.

QUEBEC.

Class	III	Bark Lake.....	A. B. Taylor.
"	II & S.	St. Anne de la Pocatière.....	Joseph Begin, B.S.A.
"	II	Cedar Rapids.....	G. P. Hawley.

NEW BRUNSWICK.

Class	II	Williamsburg.....	D. S. Peacock.
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NOVA SCOTIA.

Class	III & S.	Nappan (Experimental Station).....	R. Robertson.
"	II	Merigomish.....	E. W. Heurtley.

PHYSICS BRANCH.

The exploration of the upper atmosphere by means of kites and balloons was continued during the year. Balloons, carrying meteorographs, were sent up on the twenty-ninth evening, preceding the international days between the 1st January, 1912, and the 31st March, 1913, from Woodstock, Ont. Sixteen of these were sent up between the 1st of January and the 6th July, 1912, and ten of them have been recovered; but out of the thirteen sent up during the remainder of the period, only four have been returned, and all of them travelled a long distance, one being found

SESSIONAL PAPER No. 21

at La Tuque, near Lake St. John, Quebec. The attached table gives a summary of the results.

Date.	A	B	C	D	E	F	G
1912.							
Jan. 31	4.8	-64.5	5.8	-67.0	S.E.	114	S. 20° E.
Mar. 6	6.5	-82.5	9.4	-78.0	W.	100	E.
April 4	7.1	-86.0	9.9	-72.0	N.E.	125	S. 50° E.
May 1	7.5	-91.0	8.0	-89.0	N.W.	118	S. 86° E.
June 5	7.4	-80.0	8.1	-75.0	N.E.	203	S. 83° E.
July 1	8.1	-85.0	8.5	-83.0	W.	30	N. 65° W.
" 2	8.9	-87.0	10.7	-83.0	N.E.	53	N. 5° W.
" 3			7.6	-67.0	N. by E.	88	N. 45° E.
" 4	8.6	-85.0	10.2	-81.0	E.	37	S. 70° W.
" 5	9.8	-85.0	11.7	-76.0	Straight up.	28	N. 45° W.
Sept. 4	8.7	-87.0	9.0	-89.0	N.W.	105	S. 60° E.
Oct. 3	7.1	-65.0	7.3	-60.0	E.	332	N. 76° E.
1913.							
Jan. 1	6.7	-78.0	7.0	-74.0	N.E.	490	N. 50° E.
Feb. 6	5.9	-62.0	6.6	-60.0	E.	170	S. 85° E.

- A—Height in miles to beginning of isothermal.
- B—Temperature Fahrenheit at beginning of isothermal.
- C—Greatest height, in miles, reached by balloon.
- D—Temperature Fahrenheit at greatest height.
- E—Direction balloon travelled at starting point.
- F—Distance, in miles, of point where balloon fell from starting point.
- G—Bearing of point where balloon fell from starting point.

The kite station at Agincourt has been in operation throughout the year, and some good records have been obtained. The highest point reached was about 6,750 feet above sea-level.

Observations were commenced during the year on the potential of the air. A small house was erected near the centre of the observatory grounds for the necessary apparatus. The potential is measured by a self-recording electrometer, designed by Mr. Patterson. This instrument gives a continuous record of the potential of the air when used with a collector; the collector consists of a small deposit of polonium on copper, protected from the weather, and exposed at the end of an insulated rod, 8 ft. 6 inches above the ground and 9 feet from the building.

The past year has been very unsatisfactory for solar radiation observations. These observations can only be obtained on clear days and, in consequence, very few have been obtained during the year. The difficulties were further increased by a thick haze that made its appearance during the latter part of June and which has not yet disappeared. This has delayed the completion of the comparison of the Callendar sunshine recorder and the Angstrom pyrheliometer, which was commenced in 1911. In March a few hours were obtained one day to make observations, and it is hoped that the comparison will be completed in April.

TIME SERVICE.

During the year, sixty-two determinations for time have been made by transit of stars in the meridian with the 3-inch transit instrument. A large amount of cloudiness during November, December, and part of January, interfered very much with transit work during that period. The positions of the stars have been taken mostly from the American Ephemeris and Berliner Jahrbuch. The collimation error of the transit instrument, as in former years, has been chiefly determined by reversal

on Polaris and occasionally in conjunction with that of the instrumental azimuth by star transits in reverse position of the axis using the method of least squares in their computation.

Time has been given over the telegraph and telephone lines to all inquirers, and the comparison and regulation of chronometers and watches, both sidereal and mean, has been carried on throughout the year.

The performance of the clocks and stability of the transit pier has been very satisfactory.

The time exchanges between Toronto and Quebec, Montreal and St. John, N.B., have been made as usual, being recorded on the chronographs at Toronto, Montreal and St. John. The errors of the clocks have been computed from the latest observations.

The usual 11.55 a.m. signal on the bells of the fire alarm system has been continued throughout the year.

Time has been given weekly to the Magnetic Observatory at Agincourt and daily to the Canadian Northern Railway, running out of Toronto.

The following table will show the differences between the times at the several observatories and that at Toronto. The sign + indicates slow of Toronto.

Date.	Montreal.	Quebec.	St. John.
1912.	Seconds.	Seconds.	Seconds.
April 12...	+0.73	-0.31	+0.46
April 26.....	-0.30	-0.18	
May 10.....	-0.91	-0.70	+0.23
May 31.....	-1.23	-1.10	+0.41
June 21.....	+0.22	+0.77	+0.21
July 19.....		+0.92	-0.59
August 23.....	Wire trouble.		
August 30.....	-0.18	+0.82	+0.16
September 13.....	-0.33	+1.00	+0.24
September 27.....	-2.16	-0.96	-0.57
October 18.....	-0.68	-0.04	-0.06
November 15.....	-3.29	-0.63	+1.35
December 6.....	+1.36	+1.95	+0.89
1913.			
January 31.....	-2.39	+0.61	-0.19
February 21.....	-0.97	+0.30	-0.23
March 7.....	-1.58	-0.54	-0.87

SUN SPOT OBSERVATIONS.

During the year April 1, 1912, to April 1, 1913, the sun's surface was examined with the 6-inch equatorial telescope on 121 days, and maps made showing the position of spots on forty of those days. These maps also show the N.E.S. and W. points, the sun's axis and equator. The remaining eighty-one days showed the sun free of spots.

The sun, during this year, appears to have reached its minimum period of spots and, as will be seen by the dates below, during the months of October and November, 1912, and January, February and March 1913, with a few minor exceptions, the sun was free of spots.

A rather large group of small spots was noticed on April 9, a little SW. of the sun's centre and, by the 15th, they had disappeared around its limb. Two small spots were noticed in the SW. quadrant on May 31, and had somewhat developed by

SESSIONAL PAPER No. 21

next day. These were penumbral spots with faculae. On June 17, a moderately-sized solitary penumbral round spot was seen and observed at intervals as it was carried across the disc by rotation until the 28th June, when it was near the western limb of the sun.

A small group was observed on September 12; which increased in size gradually until it disappeared around the sun's limb on September 21. Again, on October 5, another small group was seen south of the sun's centre, developing into a rather conspicuous group by the 7th, and on December 14, 16, 18, another group, increasing in size as it advanced across the sun, was seen. Since its disappearance nothing of importance has been noticed on the sun up to April 1, 1913, except a very small spot on February 19, 20.

The following are the dates of observations:—

Sun with spots.—April, 1912, 9, 11, 13, 30; May 2, 31; June 1, 17, 18, 21, 22, 24, 25, 27, 28; July 5, 6, 8, 10; September 9, 10, 11, 12, 13, 16, 17, 19, 20, 26, 27; October 5, 7; November 16, 18; December 14, 16, 18; February 19, 20, 25, 1913.

Sun with no spots.—April 3, 15, 19, 22, 24, 25, 27; May 3, 6, 8, 10, 14, 15, 22, 25, 30; June 4, 6, 7, 8, 10, 12, 14; July 12, 16, 18; August 13, 14, 16, 21, 26, 29, 30; September 4, 5, 6, 23, 30; October 1, 2, 4, 12, 18, 21, 26, 29; November 2, 4, 5, 8, 11, 21, 22, 27, 28, 30; December 4, 7, 10, 11, 23, 26; January, 1913, 14, 20, 30; February 3, 4, 8, 11, 14, 17, 28; March 5, 11, 12, 13, 14, 17, 18, 19, 27.

Photographs taken.—May, 1912, 31; June 1, 18, 21, 22, 25, 27, 28; October 5; December 14, 16, 18; February 19, 20, 25. There was, perhaps, a little more cloudiness during the fall than usual, which prevented the taking of more observations.

MAGNETIC OBSERVATIONS.

There have been no breaks in the magnetic records at the Agincourt Observatory during the fiscal year ending March 31, 1913. The zeros of the photographic recording instruments were determined by absolute observations taken weekly for declination and twice a month for horizontal force. Inclination observations were also made weekly with the Toepfer earth inductor.

The westerly declination has increased from $6^{\circ} 12'.6$ in March, 1912, to $6^{\circ} 17'.0$ in March, 1913.

The horizontal force has decreased from 0.16181 C.G.S. units to 0.16148, and the inclination has increased from $74^{\circ} 40'.0$ to $74^{\circ} 4'.7$.

Magnetic disturbances were of very infrequent occurrence, and on 230 days the magnetic curves were classified as normal and on 126 days as being lightly disturbed, whilst only on ten days were the disturbances of any magnitude. The larger disturbances occurred in the months of April, May, August and September, 1912. In declination, the greatest amplitude recorded was $54'.9$ during the disturbance of May 11 and 12, 1912, whilst in horizontal force the greatest amplitude was 166γ and occurred during the disturbance of April 15 and 16.

The mean diurnal range of declination varied from a maximum of $12'.1$ in August, 1912, to a minimum of $5'.2$ in December, 1912, whilst in horizontal force it varied from a maximum of 42γ in May, 1912, to a minimum of 18γ in November and December, 1912.

During the fiscal year, ninety-two theodolites, within magnets attached, were compared with the Agincourt standard declinometer, and index corrections were determined and supplied to the Surveyor General.

Assistance was given to Mr. French, of the Dominion Observatory, in comparing his instruments with the Agincourt standards, both before and after his field work.

An officer of the Meteorological Service, Mr. W. E. W. Jackson, M.A., was assigned to the Hydrographic Surveys branch for the summer of 1912, to carry on a magnetic survey of Hudson bay and strait.

SEISMOLOGICAL OBSERVATIONS.

The Milne seismographs at Toronto and Victoria have been kept in successful operation throughout the year, although no very large disturbances have been recorded; still, the total number of earth tremors has been greater than usual, Toronto showing 157 and Victoria 150. Of this number, four may be considered of a moderate character, and occurred on May 6, June 8, 10, and December 9. The largest range of motion was 10m.m. on the 8th June. A prolonged series of small tremors at both stations began on June 3, culminating in a marked disturbance on the 8th at 7.55. The Katmai volcano, Alaska, was in eruption during this period, and earthquakes in the region were of frequent occurrence, which resulted in much loss of property in the vicinity.

We continue to furnish a number of scientific societies with tabulations of all earth tremors recorded, also copies of important seismograms. The British Association are gradually increasing the network of stations throughout the world and in the discussion of the data recorded our Canadian stations are considered important links in the system.

NUMBER OF PREDICTIONS AND PERCENTAGE OF FULFILMENT IN EACH DISTRICT
IN EACH MONTH FOR THE YEAR, APRIL 1, 1912, TO MARCH, 31, 1913.

Month of Year.	Alberta.					SASKATCHEWAN.					MANITOBA.					LAKE SUPERIOR.				
	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.
1912.																				
April	81	57	14	10	79.0	82	60	9	13	78.7	85	52	20	13	72.9	97	77	14	6	86.6
May	76	58	14	4	85.5	72	54	14	4	84.7	72	55	12	5	84.7	98	75	20	3	86.7
June	74	60	11	3	88.5	72	60	10	2	90.3	73	61	9	3	89.7	110	89	17	4	88.6
July	80	57	14	9	80.0	79	63	10	6	85.1	78	62	12	4	87.2	106	81	21	4	86.3
August	81	63	14	4	86.4	81	62	13	6	84.6	82	61	12	9	81.7	119	78	30	11	78.2
September	75	57	15	3	86.0	74	55	18	1	86.5	75	56	10	9	81.3	103	69	24	10	78.6
October	90	58	18	14	74.4	93	68	15	10	81.2	96	86	7	3	93.2	119	83	27	9	81.1
November	78	63	13	2	89.1	77	68	8	1	93.5	78	67	11	1	92.9	124	90	28	6	83.9
December	79	63	9	7	85.4	80	59	14	7	82.5	83	62	15	6	83.7	112	76	28	8	80.3
1913.																				
January	84	66	17	1	88.7	80	63	14	3	87.5	82	64	14	4	86.6	95	75	17	3	90.0
February	78	59	13	6	84.0	80	57	15	8	80.6	80	60	15	5	84.4	95	78	15	2	84.4
March	82	68	6	8	86.6	85	66	13	6	85.3	89	73	9	7	87.0	106	80	19	7	78.8
Totals	958	729	158	71	84.3	955	735	153	67	84.9	973	759	146	68	85.5	1,284	951	260	73	

SESSIONAL PAPER No. 21

NUMBER OF PREDICTIONS AND PERCENTAGE OF FULFILMENT IN EACH DISTRICT,
IN EACH MONTH FOR THE YEAR, APRIL 1, 1912, TO MARCH 31, 1913—*Con.*

Month of Year.	LOWER LAKES.					GEORGIAN BAY.					OTTAWA VALLEY.				
	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.
1912.															
April.....	113	83	22	8	83.2	112	81	20	11	81.2	95	69	18	8	82.1
May.....	109	92	15	2	91.2	109	91	13	5	89.4	89	66	14	9	82.0
June.....	116	106	9	1	95.3	116	94	17	5	88.4	99	74	19	6	84.3
July....	126	111	12	3	92.9	127	111	15	1	93.3	116	102	9	5	91.8
August.....	120	99	15	6	88.8	121	101	13	7	88.8	104	88	12	4	90.4
September.....	105	80	13	12	82.4	106	79	17	10	82.5	87	65	16	6	83.9
October.....	123	99	18	6	87.8	123	105	11	7	89.8	108	88	15	5	88.4
November.....	123	99	16	8	87.0	123	91	21	11	82.5	104	81	17	6	86.1
December.....	115	94	18	3	89.6	116	87	23	6	84.9	107	73	26	8	80.4
1913.															
January.....	110	90	16	4	89.1	110	88	17	5	87.7	96	73	21	2	87.0
February.....	115	93	12	10	86.1	115	78	18	19	75.7	97	73	12	12	81.4
March.....	128	106	18	4	89.8	127	99	20	8	85.8	118	91	18	9	84.9
Totals.....	1,403	1,152	184	67	88.7	1,405	1,105	205	95	85.9	1,220	943	197	80	85.4

Month of Year.	UPPER ST. LAWRENCE.					LOWER ST. LAWRENCE.					GULF.				
	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.
1912.															
April.	95	70	17	8	82.6	107	83	18	6	86.0	109	81	19	9	83.0
May.....	92	70	13	9	83.1	106	74	22	10	80.2	105	71	30	4	81.9
June.....	98	78	16	4	87.7	115	92	15	8	86.5	117	89	23	5	85.9
July.....	116	103	9	4	92.7	120	102	13	5	90.4	121	96	14	11	85.1
August.....	104	89	10	5	90.4	116	93	18	5	87.9	114	91	20	3	88.6
September.....	87	68	13	6	86.8	108	73	27	8	80.1	109	77	25	7	82.1
October.....	108	91	12	5	89.8	124	99	17	8	86.7	123	98	15	10	85.8
November.....	104	82	17	5	87.0	114	86	18	10	83.3	122	89	23	10	82.4
December.....	107	79	21	7	83.6	110	78	21	11	80.5	111	75	28	8	80.2
1913.															
January.....	94	73	19	2	87.8	94	78	12	4	89.4	107	89	16	2	90.6
February.....	96	73	15	8	83.9	101	75	20	6	84.2	101	73	23	5	83.7
March....	118	96	14	8	87.3	130	93	20	17	79.2	130	99	18	13	83.1
Totals.....	1,219	972	176	71	86.9	1,345	1,026	221	98	84.5	1,369	1,028	254	87	84.4

NUMBER OF PREDICTIONS AND PERCENTAGE OF FULFILMENT IN EACH DISTRICT
IN EACH MONTH FOR THE YEAR, APRIL, 1, 1912, TO MARCH, 31, 1913—*Con.*

Month of Year.	MARITIME WEST.					MARITIME EAST.					TOTALS.				
	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified
1912.															
April.	116	89	20	7	85.3	115	88	24	3	87.0	1,207	890	215	102	82.6
May.....	107	74	28	5	82.2	110	74	31	5	81.4	1,145	854	226	65	84.5
June..	116	87	23	6	84.9	116	87	25	4	85.8	1,222	977	194	51	87.9
July.....	120	94	16	10	85.0	118	93	15	10	85.2	1,307	1,075	160	72	88.4
August.....	115	94	20	1	90.4	115	93	17	5	88.2	1,272	1,012	194	66	87.2
September.....	110	83	17	10	83.2	110	80	22	8	82.7	1,149	842	217	90	82.7
October.....	123	98	20	5	87.8	124	105	13	6	89.9	1,354	1,078	188	88	86.6
November.....	123	96	19	8	85.8	123	92	20	11	82.9	1,293	1,004	211	78	85.8
December.....	124	85	28	11	79.8	124	89	21	14	80.2	1,268	920	252	96	82.6
1913.															
January.....	117	98	10	9	88.0	117	96	16	5	88.9	1,186	953	189	44	88.1
February.....	110	81	21	8	83.2	111	73	26	12	77.5	1,179	873	205	101	82.7
March.....	129	104	18	7	87.6	129	95	22	12	82.2	1,371	1,070	195	106	85.2
Totals	1,410	1,083	240	87	85.3	1,412	1,065	252	95	84.3	14,953	11,548	2,446	959	85.4

SESSIONAL PAPER No. 21

BRITISH COLUMBIA DIVISION.

NUMBER of Predictions and Percentage of Fulfilment in each District in each month for the Year April 1, 1912, to March 31, 1913.

Month of Year.	VICTORIA AND VICINITY.					LOWER MAINLAND.				
	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.
1912.										
April	105	77	9	19	77.6	101	75	1	25	74.8
May	118	97	8	13	85.6	113	95		18	84.1
June	120	99	7	14	85.4	114	102	2	10	90.5
July	126	110	4	12	89.7	121	111	1	9	92.1
August	114	96	4	14	86.0	106	92	2	12	87.7
September	104	90	4	10	88.5	98	87		11	88.8
October	117	88	9	20	79.1	110	91	1	18	83.2
November	103	85	4	14	84.5	98	95		3	96.9
December	107	83	11	13	82.7	94	83		11	88.3
1913.										
January	105	86	4	15	83.8	102	86	1	15	84.8
February	106	85	5	16	82.5	94	75	2	17	80.9
March	107	92	4	11	87.9	100	90	1	9	90.5
Totals	1,332	1,088	73	171	84.4	1,251	1,082	11	158	86.9

Month of Year.	KAMLOOPS.					TOTALS.				
	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.	No. of predictions.	No. fully verified.	No. partly verified.	No. not verified.	Percentage verified.
1912.										
April	66	61		5	92.4	272	213	10	49	80.2
May	82	73		9	89.0	313	265	8	40	85.9
June	86	75	3	8	89.0	320	276	12	32	88.1
July	84	73	1	10	87.5	331	294	6	31	89.7
August	76	59	1	16	78.3	296	247	7	42	84.6
September	72	63		9	87.5	274	240	4	30	88.3
October	81	73	2	6	91.4	308	252	12	44	83.8
November	75	52	9	14	75.4	276	232	13	31	86.4
December	71	54	5	12	79.6	272	220	16	36	83.8
1913.										
January	75	52	4	19	72.0	282	224	9	49	81.0
February	72	65	2	5	91.7	272	225	9	38	84.4
March	70	54	2	14	78.6	277	236	7	34	86.5
Totals	910	754	29	127	84.4	3,493	2,924	113	456	85.3

4 GEORGE V., A. 1914

APPENDIX 'A.'

METEOROLOGICAL SERVICE,

ST. JOHN OBSERVATORY,

ST. JOHN, N.B., April, 1913.

R. F. STUPART, F.R.S.C.,

Director, Meteorological Service,

Toronto, Ont.

SIR,—I have the honour to present the annual report on the Observatory at St. John for the fiscal year ending March 31, 1913.

Meteorological service.—The regular observations of the various meteorological elements have been continued throughout the year without a break. No important change has been made in the method of observation, equipment or exposure of the instruments. The eye-reading, electrical and other recording instruments are in excellent condition.

Twice daily (at 9 a.m. and 9 p.m.) telegraphic reports of prevailing conditions and instrumental readings are telegraphed to Toronto, these reports forming part of the Canadian series upon which the forecasts are based.

The wind station at Point Lepreaux continues to give most useful and satisfactory results. The automatic records are sent here weekly, where they are tabulated and analysis made.

The demand for copies of the morning Weather Bulletin continues to increase. The bulletin is issued as promptly as possible after receipt of the telegraphic message from Toronto. Copy is immediately prepared and sent to the printer and, on an average, is returned in thirty minutes. The bulletin is then posted in public places, distributed through the mail and, with the addition of a local summary, is handed to the evening papers for publication. The forecasts and other information thus disseminated are of great value to mariners, shippers, construction companies and other interests.

Requests for information from the office records, by mail, personal calls and telephone, are annually increasing and especially during the busy shipping season considerably increase the clerical work, as tabulated and signed copies for adjustment of claims are frequently asked for.

As heretofore, the press obtain information during periods of extreme, stormy or unusual weather conditions.

Storm warning messages from Toronto are immediately repeated by telephone to Point Lepreaux and Quaco storm signal stations. The daily forecast is telephoned to St. Martins and posted at their telephone exchange.

Every week-day morning at 6 o'clock the New Brunswick Telephone Company sends the Toronto forecasts to all their offices, where they are displayed on forms supplied by the Meteorological Service. This extensive and valuable distribution is made gratuitously, and the courtesy is most useful to residents of localities not having telegraphic facilities.

Time service of the Maritime Provinces.—Observations for time have been made nearly every clear night, and the errors and rates of the standard sidereal clocks determined. The transit micrometer method of observations has been used almost entirely, the observations and clock comparisons being recorded on the chronograph, as heretofore reported.

Clocks.—The Riefler sidereal, run under constant pressure, continues to give most reliable results. This clock, as well as the Kullberg sidereal in the basement constant temperature clock room, is in good condition. The mean time standard

SESSIONAL PAPER No. 21

transmitting clock and the mean time clock used for hourly synchronizing clocks distributed throughout the city are mounted in the office.

There has been a decided increase to the number of clocks which are hourly synchronized from the master clock in St. John. In addition to the private wire run by owners of clocks, the New Brunswick Telephone Company now rent wires for this purpose, the fee depending upon the distance from their office. An electric tower clock was installed by the Public Works Department in their new post office building in Fairville. This clock is connected and hourly synchronized. A similar tower clock in the post office building in Parrsboro, N.S., is daily synchronized.

Time Signals.—The daily time signal has been sent over the Western Union wires throughout the Maritime Provinces for the two minute interval ending at 10 a.m. This signal is sent automatically by the transmitting clock which, at the proper instant, opens the line, gives the signal of arranged dots and pauses and then closes the circuit. Before sending this signal, comparison with the Riefler standard sidereal clock is made on the chronograph and, when necessary, the transmitter is brought exactly to time by a device explained in my last report.

At other times than 10 a.m., time signals, upon request of mariners and others from various parts of the Maritime Provinces, are frequently sent by telegraph or telephone from this clock, the beats from the relay being audible through long distance telephone.

Wireless Time Signals.—The apparatus at Camperdown, N.S., which automatically repeats the time signal from land line to wireless has proved satisfactory. Navigators, equipped with the wireless, pick up the signal, state that it is distinctly received and is most practical for checking the ship's chronometers.

Time balls at St. John and Halifax have been dropped each week day at 1 p.m., standard time of the 60th meridian.

Since the improvements made last year in the electrical apparatus at Halifax, little or no trouble has been experienced with the connections between the electric clock in the Western Union office and the time ball at the citadel.

The signal for synchronizing the Halifax clock has been sent daily at 10 a.m. Should failure occur on account of wire trouble, the signal was hourly repeated until satisfactorily received.

Watch and chronometer adjusters and others in Halifax have sounders on their premises connected by wire with the telegraph office to receive the 10 a.m. signal from the Observatory. The Nova Scotia Telephone Co. also receives the signal for synchronizing the master clock of their electric time service installed during the past year.

I have the honour to be, sir,

Your obedient servant,

D. L. HUTCHINSON,

Director, St. John Observatory.

4 GEORGE V., A. 1914

APPENDIX 'B.'

QUEBEC, May 1, 1913.

R. F. STUPART, Esq.,
Director, Meteorological Service,
Toronto.

SIR,—I have the honour to submit my annual report for the fiscal year ending March 31, 1913.

During the year 1912, the observatory property has been ceded to the National Battlefields Commission, with the exception of a parcel of land 300 feet long by 200 feet wide surrounding the observatory buildings.

No change has been made in the site and exposure of the meteorological instruments, which are in good order, and the observations were taken regularly. The bi-hourly temperatures have been discontinued at the citadel on the 1st of December and were replaced by thermograph records at the Observatory. Barometers and thermometers were compared for the public with our instruments, on many occasions.

As regards the time service, the noon gun has been placed on top of the wall facing the main entrance to the citadel, from which place it is now heard in almost every ward of the city.

The time ball is still dropped on the citadel, near the old Observatory, and the apparatus is in good working order, having been thoroughly repaired before the opening of navigation.

As mentioned in my last report, the ball is so situated that it is not visible for ships moored in the 'Louise Basin,' and mariners were sometimes obliged to cross over to Lévis to see it dropped.

Upon request that a better site be found if possible, I have suggested that it be placed on top of the custom-house building, which is situated on the river front near the entrance to 'Louise Basin.'

Several chronometers and surveyors' watches were rated at the Observatory.

Statistics and other reports were often given to the public, and inquiries were very numerous during the year.

Towards the end of the month of May, 1912, I visited Tadousac to choose a site for the erection of a storm signal mast at that place. The mast has been erected at the summit of 'Pointe l'Islet,' as suggested, on the property of the Richelieu and Ontario Navigation Company, near the entrance of the Saguenay river.

I was also requested to place a sunshine recorder in position at the Experimental Farm, Ste. Anne de la Pocatière. I visited that place during the month of December last and instructed the superintendent in putting up and adjusting the instrument.

I beg also to report that the Observatory buildings are in bad order and need considerable repairs within the shortest possible delay.

I have reported the fact to the Public Works Department through the District Engineer at Quebec. I regret to say, however, that very little has been done so far to improve the present conditions.

The whole respectfully submitted,

ARTHUR SMITH,
Director, Quebec Observatory.

OTTAWA, June 11, 1913.

Marine Hospitals Service.

Province.	Number of Seamen.	Number of days given.	Total Expenditure.
			\$ cts.
Nova Scotia.....	1,550	11,389	25,693 52
New Brunswick.....	669	3,229	8,142 18
Prince Edward Island..	162	537	1,637 14
Quebec.....	561	4,259	8,786 25
British Columbia.....	245	3,451	7,149 30
General Account.....			764 36
	3,187	22,865	52,172 75

4 GEORGE V., A. 1914

TABLE showing the Expenditure for each Port.

NOVA SCOTIA.

Port.	Number of Seamen.	Number of days given.	Total Expenditure.
			\$ cts.
Advocate Harbour	9	98	448 00
Amherst	1		5 00
Annapolis Royal	13	34	179 42
Apple River	5	14	141 50
Arichat	19	414	439 28
Baddeck	9		51 00
Barrington	14	72	338 72
Barton	11	773	625 55
Bear River	13	17	157 31
Belliveau's Cove	2	25	50 78
Bridgetown	4	51	96 34
Bridgewater	8		200 00
Canso	62	125	480 03
Chester	2		10 75
Cheticamp	78	16	501 50
Cheverie	1	21	99 30
Church Point	2	42	41 75
Clark's Harbour	8	62	268 75
Clementsport	5	95	196 52
Digby	37	167	387 61
Economy	2		67 50
Freeport, Westport and Tiverton	24	721	709 46
Gabarus	2	11	42 25
Glace Bay	3		150 00
Guysborough	1		1 80
Hantsport	9		54 75
Halifax: Victoria General Hospital	147	2,706	4,115 00
Halifax Infirmary	1	14	21 00
Halifax City Hospital	2	79	127 67
Halifax Mission Society			200 00
Ingram Docks	8		73 35
Joggins	1		39 00
Lahave	9		52 50
Liscomb	1		15 75
Liverpool	3	32	116 00
Lockport	24	308	210 98
Louisburg	31	388	1,383 55
Lunenburg	16	376	1,084 70
Mahone Bay	22	91	380 60
Margaree	4		83 00
Margaretsville	8	197	1,417 63
Meteghan	2	112	119 40
Middleton	1		90 35
Musquodoboit	1		4 50
North Sydney	400	445	1,850 49
Parrsboro	41	9	321 55
Pictou	89	125	688 50
Port Dufferin	1		6 25
Port Greville	9		150 00
Port LaTour	14		125 00
Ports Hawkesbury, Hastings, Mulgrave and Point Tupper	42	61	443 75
Port Medway	1		22 05
Port Morien	4		125 00
Port Wade	2	58	119 50
Pubnico	13	41	280 58
Pugwash	11		22 50
River Hebert	1		17 00
Salmon River	2	184	284 40
Sandy Cove	16	315	503 50
Sheet Harbour	5		42 00
Shelburne	12	4	70 25
Sherbrooke	5	9	61 50
Springhill	5	193	188 10
Spry Bay	3		167 50
St. Peters, L'Ardoise and River Bourgeois	40	35	277 50

SESSIONAL PAPER No. 21

TABLE showing the Expenditure for each Port—*Continued.*

NOVA SCOTIA—*Concluded.*

Port.	Number of Seamen.	Number of days given.	Total expenditnre.
			\$ cts.
Sydney.	82	1,832	2,590 15
Walton.	12		46 80
West Bay.	1		10 00
Weymouth.	15	89	169 53
White Haven.	1	30	274 33
Windsor.	33	106	201 98
Yarmouth.	65	791	1,353 96
Total.	1,550	11,389	25,693 52

NEW BRUNSWICK.

Albert.	2		8 50
Alma.	5		12 50
Baie Verte.	3	14	99 35
Bathurst.	15	87	228 65
Beaver Harbour.	1		2 00
Buctouche.	5		17 75
Campbellton.	47	14	360 75
Cape Tormentine.	7		150 00
Caraquet.	86	15	158 87
Dalhousie.	47		253 80
Dorchester.	11	183	126 25
Douglastown.	58	283	1,073 03
Grand Harbour.	5		200 00
Harvey.	3		23 00
Hillsboro and Hopewell Cape.	16		140 83
Jacquet River.	17		94 50
Moncton.	5		200 00
North Head.	2		29 70
Quaco.	3		17 50
Richibucto.	6		200 00
Shediac.	10		202 05
Shippigan.	110		246 50
St. Andrews.	1		8 35
St. George.	2		6 00
St. John: General Public Hospital.	191	2,633	3,949 50
St. John Seamen's Society.			200 00
St. Martins.	3		14 30
St. Stephens.	3		9 60
Wilson's Beach.	5		108 90
Total.	669	3,229	8,142 18

PRINCE EDWARD ISLAND.

Alberton.	6		21 50
Cardigan.	1		3 00
Charlottetown Hospital.	15	313	469 50
Charlottetown, P.E.I. Hospital.	9	174	261 00
Georgetown.	5		11 90
Malpecque.	3		11 20
Miminegash.	3		46 50
Montague.	8		17 10
Murray Harbour.	5		91 94
New London.	4	15	56 00
Rustico.	1		20 00
Souris.	61	35	317 50
Summerside.	40		250 00
Vernon River.	1		45 00
	162	537	1,637 14

TABLE showing the Expenditure for each Port—Continued.
QUEBEC.

Port.	Number of Seamen.	Number of days given.	Total Expenditure.
			\$ cts.
Batiscan.....	3		46 00
Carleton.....	1		6 00
Chicoutimi.....	3	96	115 20
Fraserville.....	14	78	195 00
Gaspé.....			50 00
Grande Rivière.....	9		46 40
Magdalen Islands.....	9	3	84 00
Matane.....	11	7	62 20
Montreal Alexandra Hospital.....	2	4	18 00
" General Hospital.....	196	1,757	2,721 50
" Notre Dame Hospital.....	85	1,073	1,623 50
" Catholic Sailors' Club.....			200 00
" Sailors' Institute.....			200 00
Paspebiac.....	11		125 00
Percé.....	9		31 50
Port Daniel.....	8	7	45 10
Quebec Hotel Dieu Hospital.....	17	179	268 50
" Jeffery Hale Hospital.....	271	961	1,441 50
Rimouski.....	7		15 50
Sorel.....	21	19	219 25
St. John.....	49	9	608 10
St. Thomas de Montmagny.....	2	29	280 70
Three Rivers.....	33	37	383 30
	561	4,259	8,786 25

BRITISH COLUMBIA.

Chemainus.....	9	33	123 00
Ladysmith.....	1		7 00
Nanaimo.....	54	127	727 00
New Westminster.....	3	31	34 00
Prince Rupert.....	7	71	213 50
Union Bay.....	5		400 00
Vancouver, St. Paul's Hospital.....	76	1,670	2,505 00
Victoria, St. Joseph's Hospital.....	89	1,508	2,711 20
" City Hospital.....	1	11	28 60
" Seamen's Society.....			400 00
	245	3,451	7,149 30

NUMBER OF VOUCHERS ISSUED FOR EACH PROVINCE.

Nova Scotia.....	719
New Brunswick.....	148
Prince Edward Island.....	56
Quebec.....	104
British Columbia.....	62
General Account.....	17
Total.....	1,106

SESSIONAL PAPER No. 21

TABLE showing Expenditure for Treatment, Board, Supplies, etc.

	Nova Scotia	New Brunswick	Prince Edward Island	Quebec	British Columbia	General Account.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Board in hospitals and private houses	8,755 31	4,140 55	759 00	6,273 10	4,942 85	
Medical and surgical treatment	4,146 40	1,222 77	238 70	862 30	178 50	
Medical officers and keepers' salaries	8,816 83	2,328 33	639 44	1,125 00	1,600 00	
Fuel	799 34	106 97				
Water	8 00					
Telephone service	102 69	19 70				
Drugs, instruments, etc	33 15	28 58				
Repairs and maintenance	998 30	7 90				
Burials	41 00					
Transportation	310 85	15 82		125 85	6 50	294 85
Special nursing	624 28				21 45	
Grants	200 00	200 00		400 00	400 00	
Expenditure, bedding and other supplies	372 91	56 31				
Medical assistance	478 00	15 25				
Express and freight	6 46					
Printing and stationery						469 51
	25,693 52	8,142 18	1,637 14	8,786 25	7,149 30	764 36

TABLE showing Amount of Salaries Paid to Medical Officers and Keepers during the Fiscal Year 1912-13.

Nova Scotia.	\$ cts.	Nova Scotia—Concluded.	\$ cts.
Annapolis Royal—		Parrsboro—	
Medical officer	160 00	Medical officer	300 00
Arichat—		Pictou—	
Medical officer	300 00	Medical officer	400 00
Barrington—		Keeper	50 00
Medical officer	300 00	Watchman	104 50
Barton—		Ports : Hawkesbury, Hastings, Mulgrave and Pt. Tupper—	
Medical officer	250 00	Medical officer	342 75
Bear River—		Port Grenville—	
Medical officer	150 00	Medical officer	150 00
Bridgewater—		Port LaTour—	
Medical officer	200 00	Medical officer	125 00
Canso—		Port Morien—	
Medical officer	375 00	Medical officer	125 00
Clark's Harbour—		Pubnico—	
Medical officer	250 00	Medical officer	239 58
Digby—		Sandy Cove—	
Medical officer	250 00	Medical officer	275 00
Keeper	50 00	Shelburne—	
Freeport, Westport and Tiverton—		Medical officer	25 00
Medical officer	400 00	St. Peter's, L'Ardoise and River Bourgeois—	
Glace Bay—		Medical officer	250 00
Medical officer	150 00	Sydney—	
Liverpool—		Medical officer	500 00
Medical officer	100 00	Keeper	300 00
Lockport—		Weymouth—	
Medical officer	100 00	Medical officer	125 00
Louisburg—		Windsor—	
Medical officer	250 00	Medical officer	120 00
Keeper	300 00	Yarmouth—	
Lunenburg—		Medical officer	400 00
Medical officer	500 00		
Keeper	150 00		
North Sydney—			
Medical officer	750 00		8,816 83

TABLE showing amount of Salaries paid to Medical Officers and Keepers during the Fiscal Year 1912-13—*Concluded.*

<i>New Brunswick.</i>	\$ cts.	<i>Prince Edward Island—Con.</i>	\$ cts.
Bathurst—		Summerside —	
Medical officer.	150 00	Medical officer.....	250 00
Campbell—		Total.	\$639 44
Medical officer.	350 00		
Cape Tormentine—		<i>Quebec.</i>	
Medical officer.....	150 00		
Douglastown—		Gaspe—	
Medical officer... ..	450 00	Medical officer.....	50 00
Keeper	250 00	Paspébiac—	
Dalhousie—		Medical officer.....	125 00
Medical officer.....	237 50	St. Johns—	
Hillsboro and Hopewell Cape--		Medical officer.....	600 00
Medical officer.....	140 83	Three Rivers—	
Moncton—		Medical officer.....	350 00
Medical officer.....	200 00	Total.	\$1,125 00
Richibucto—			
Medical officer... ..	200 00	<i>British Columbia.</i>	
Shediac—			
Medical officer.....	200 00	Nanaimo—	
Total.	\$2,378 33	Medical officer.....	600 00
<i>Prince Edward Island.</i>		Union Bay—	
		Medical officer.....	400 00
Murray Harbour —		Victoria—	
Medical officer.....	89 44	Medical officer.....	600 00
Souris—		Total.....	\$1,600 00
Medical officer.....	300 00		

TABLE showing Expenditure for Physicians' Services and Travelling Expenses, Drugs and Board.

NOVA SCOTIA.

Port.	Physicians' services.	Physicians' travelling expenses.	Drugs.	Board.	Total expenditure.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Advocate Harbour.....	103 00	197 90	61 00	49 00	410 00
Amherst.....	5 00				5 00
Annapolis Royal.....				19 42	19 42
Apple River... ..	23 00	82 00	21 00	7 00	133 00
Arichat				139 28	139 28
Baddeck.....	14 00	9 00	28 00		51 00
Barrington.				38 72	38 72
Barton.. ..				333 30	333 30
Bear River.....				7 31	7 31
Belliveau's Cove	13 00	26 00	2 00	9 78	50 78
Bridgetown.....	44 00	3 50	19 70	29 14	96 34
Canso.. ..				90 03	90 03
Chester.....	6 00		4 75		10 75
Cheticamp.....	258 00	42 00	185 50	16 00	501 50
Cheverie.....	17 00	32 00	2 30	48 00	99 30
Church Point.....	7 00	10 00	6 75	18 00	41 75
Clark's Harbour.....				18 75	18 75
Clementsport.	28 00	112 00	15 80	40 72	196 52
Digby.....				71 61	71 61
Economy.	13 00	44 00	10 50		67 50
Freeport, Westport and Tiverton.....				309 46	309 46
Gabarus	8 00	11 00	2 00	11 00	32 00
Guysborough.	1 00		80		1 80
Hantsport.....	30 00		24 75		54 75
Halifax Victoria General Hospital.....				4,059 00	1,059 00
Halifax Infirmary.				21 00	21 00
Halifax City Hospital.....	33 40			90 27	123 67
Ingram Docks	18 00	51 00	4 35		73 35

SESSIONAL PAPER No. 21

TABLE showing Expenditure for Physicians' Services and Travelling Expenses,
Drugs and Board—*Continued.*

NOVA SCOTIA—*Concluded.*

Port.	Physicians' Services.	Physicians' Travelling Expenses.	Drugs.	Board.	Total Expenditure
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Joggins.....	34 00		5 00		39 00
Lahave.....	26 00	11 00	15 50		52 50
Liscomb.....	2 00	12 00	1 75		15 75
Liverpool.....				16 00	16 00
Lockeport.....				110 98	110 98
Louisburg.....				126 80	126 80
Lunenburg.....				188 00	188 00
Mahone Bay.....	188 00	89 50	57 60	45 50	380 60
Margaree.....	47 00	27 25	8 75		83 00
Margaretsville.....	139 00	530 00	147 70	97 00	913 70
Meteghan.....	28 00	27 00	24 40	40 00	119 40
Middleton.....	17 00	57 00	16 35		90 35
Musquodoboit.....	2 00		2 50		4 50
North Sydney.....			80 15	509 00	589 15
Parrsboro'.....				8 10	8 10
Pictou.....				121 00	121 00
Port Dufferin.....	5 00		1 25		6 25
Ports: Hawkesbury, Hastings, Mulgrave and Point Tupper.....	1 00	11 00		61 00	73 00
Port Medway.....	6 00	12 00			18 00
Port Wade.....	15 00	66 00	6 50	32 00	119 50
Pubnico.....				41 00	41 00
Pugwash.....	16 00		6 50		22 50
River Hebert.....	14 00		3 00		17 00
Salmon River.....	100 00	97 00	22 50	64 90	284 40
Sandy Cove.....				157 50	157 50
Shelburne.....	33 00		8 25	4 00	45 25
Sheet Harbour.....	9 00	24 50	8 50		42 00
Sherbrooke.....	28 50	9 00	10 50	13 50	61 50
Springhill.....				173 70	173 70
Spry Bay.....	34 00	107 00	22 00	4 50	167 50
St. Peter's, L'Ardoise and River Bourgeois.....				27 50	27 50
Sydney.....				913 20	913 20
Walton.....	37 00		9 80		46 80
West Bay.....	10 00				10 00
Weymouth.....				42 93	42 93
White Haven.....	67 00	98 00	1 95	21 43	187 48
Windsor.....				81 98	81 98
Yarmouth.....	20 00			427 00	447 00
	1,499 90	1,797 75	848 75	8,755 31	12,901 71

NEW BRUNSWICK.

Albert.....	7 00		1 50		8 50
Alma.....	8 00	2 00	2 50		12 50
Baie Verte.....	66 00		19 35	14 00	99 35
Bathurst.....	5 00		1 00	72 65	78 65
Beaver Harbour.....	1 00		1 00		2 00
Buctouche.....	11 00		6 75		17 75
Campbellton.....				10 75	10 75
Caraquet.....	56 50		96 37	6 00	158 87
Dalhousie.....				2 70	2 70
Dorchester.....	25 00	8 50	7 50	84 95	126 25
Douglastown.....				141 50	141 50
Grand Harbour.....	51 00	120 00	29 00		200 00
Harvey.....	4 00	16 00	3 00		23 00
Jacquet River.....	27 00	63 00	4 50		94 50
North Head.....	12 00	11 50	6 20		29 70
Quaco.....	14 00		3 50		17 50
Shippigan.....	87 00		159 50		246 50

TABLE showing Expenditure for Physicians' Services and Travelling Expenses,
Drugs and Board—*Concluded.*NEW BRUNSWICK—*Continued.*

Ports.	Physicians' services.	Physicians' travelling expenses.	Drugs.	Board.	Total expenditure.
	cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
St. Andrews.....	3 00	.....	2 00	.....	5 00
St. John.....	.....	.....	.....	3,939 50	3,949 50
St. Georges.....	3 00	.....	3 00	.....	6 00
St. Martin.....	8 00	2 50	3 80	.....	14 30
St. Stephens ..	8 00	.....	1 60	.....	9 60
Wilson's Beach.....	79 00	17 00	12 90	.....	108 90
	475 50	240 50	365 27	4,282 05	5,363 32

PRINCE EDWARD ISLAND.

Alberton.....	13 00	.....	11 50	.....	24 50
Cardigan.....	10 00	.....	5 00	.....	15 00
Charlottetown Hospital.....	.....	.....	.....	469 50	469 50
Prince Edward Island Hospital.....	.....	.....	.....	261 00	261 00
Georgetown.....	6 00	.....	5 90	.....	11 90
Malpeque ..	4 00	.....	7 50	.....	11 50
Miminegash.....	12 00	21 00	.....	13 50	46 50
Montague.....	10 00	.....	7 50	.....	17 50
Murray Harbour.....	2 50	.....	.....	.....	2 50
New London.....	30 00	7 00	8 00	11 00	56 00
Rustico.....	3 00	15 00	2 00	.....	20 00
Souris.....	.....	.....	.....	17 50	17 50
Vernon River.....	13 00	26 00	6 00	.....	45 00
	103 50	69 00	53 40	772 50	998 40

QUEBEC.

Batiscan	26 00	13 00	7 00	.....	46 00
Carleton.....	4 00	.....	2 00	.....	6 00
Chicoutimi.....	.....	.....	.....	115 20	115 20
Fraserville ..	92 00	.....	25 00	78 00	195 00
Grande Rivière...	33 00	.....	13 40	.....	46 40
Magdalen Islands..	21 00	19 00	41 00	3 00	84 00
Matane.....	19 00	2 00	11 85	9 50	42 35
Montreal Alexandra Hospital.....	.....	.....	.....	12 00	12 00
" General Hospital.....	.....	.....	.....	2,635 50	2,635 50
" Notre Dame Hospital.....	.....	.....	.....	1,609 50	1,609 50
Perce	16 00	0 50	15 00	.....	31 50
Port Daniel.....	26 00	.....	12 10	7 00	45 10
Quebec Hotel Dieu Hospital.....	.....	.....	.....	268 50	268 50
" Jeffery Hale Hospital.....	.....	.....	.....	1,441 50	1,441 50
Rimouski.....	8 00	7 50	.....	.....	15 50
Sorel.....	151 00	.....	45 25	23 00	219 25
St. Johns.....	.....	.....	.....	8 10	8 10
St. Thomas de Montmagny.....	226 00	.....	25 70	29 00	280 70
Three Rivers.....	.....	.....	.....	33 30	33 30
	622 00	34 50	205 80	6,273 10	7,135 40

BRITISH COLUMBIA.

Chemainus.....	75 00	.....	15 00	33 00	123 00
Ladysmith.....	7 00	.....	.....	.....	7 00
Nanaimo.....	.....	.....	.....	127 00	127 00
New Westminster.....	.....	.....	3 00	31 00	34 00
Prince Rupert.....	71 00	.....	7 50	128 50	207 00
Vancouver St. Paul's Hospital ..	.....	.....	.....	2,505 00	2,505 00
Victoria St. Joseph's Hospital ..	.....	.....	.....	2,111 20	2,111 20
Victoria City Hospital.....	.....	.....	.....	7 15	7 15
	153 00	.....	25 50	4,924 85	5,121 35

SESSIONAL PAPER No. 21

DETAILED EXPENDITURE FOR FUEL.

Nova Scotia—

Louisburg marine hospital.....	\$166 50	
Lunenburg marine hospital.....	193 00	
Sydney marine hospital.....	222 00	
Yarmouth marine hospital.....	217 84	
	<hr/>	\$ 799 34

New Brunswick—

Douglas marine hospital.....	\$106 97	
	<hr/>	106 97

Total expenditure.....\$ 906 31

DETAILED EXPENDITURE FOR WATER SUPPLY.

Nova Scotia—

Pictou marine hospital.....	\$ 8 00	
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DETAILED EXPENDITURE FOR TELEPHONE SERVICE.

Nova Scotia—

Barton.....	\$ 0 65	
Lunenburg.....	27 00	
Sydney.....	40 00	
Yarmouth.....	35 04	
	<hr/>	\$ 102 69

New Brunswick—

Douglastown.....	\$ 19 70	
	<hr/>	19 70

Total expenditure.....\$ 122 39

DETAILED EXPENDITURE FOR REPAIRS AND MAINTENANCE.

Nova Scotia—

Louisburg marine hospital.....	\$492 00	
Sydney marine hospital.....	382 80	
Yarmouth marine hospital.....	123 50	
	<hr/>	\$ 998 30

New Brunswick—

Douglastown marine hospital.....	\$ 7 90	
	<hr/>	7 90

Total expenditure.....\$ 1,006 20

GRANTS TO SEAMEN'S MISSIONS.

Nova Scotia—

Seamen's Society, Halifax.....	\$200 00	
	<hr/>	\$ 200 00

New Brunswick—

Seamen's Mission Society, St. John.....	\$200 00	
	<hr/>	200 00

Quebec—

Seamen's Institute, Montreal.....	\$200 00	
Catholic Sailors's Club, Montreal.....	200 00	
	<hr/>	400 00

British Columbia—

Seamen's Society, Victoria (2 years).....	\$400 00	
	<hr/>	400 00

Total expenditure.....\$ 1,200 00

DETAILED EXPENDITURE FOR DRUGS AND INSTRUMENTS.

<i>Nova Scotia—</i>		
Sydney marine hospital.....	\$ 28 95	
Yarmouth marine hospital.....	4 20	
	<hr/>	\$ 33 15
<i>New Brunswick—</i>		
Douglastown marine hospital.....	\$ 28 58	
	<hr/>	28 58
Total expenditure.....	\$	61 73

DETAILED EXPENDITURE FOR TRANSPORTATION.

<i>Nova Scotia—</i>		
Advocate Harbour.....	\$ 8 00	
Apple River.....	8 50	
Barton.....	41 60	
Digby.....	6 00	
Gabarus.....	4 25	
Halifax.....	44 00	
Margaretsville.....	22 50	
North Sydney.....	105 00	
Parrsboro.....	8 45	
Port Medway.....	4 05	
Sandy Cove.....	30 00	
Springhill.....	14 40	
Sydney.....	5 00	
Weymouth.....	1 60	
Yarmouth.....	7 50	
	<hr/>	\$ 310 85
<i>New Brunswick—</i>		
Dalhousie.....	\$ 8 35	
Douglastown.....	2 07	
Shediac.....	2 05	
St. Andrews.....	3 35	
	<hr/>	15 82
<i>Quebec—</i>		
Matane	19 85	
Montreal.....	106 00	
	<hr/>	125 85
<i>British Columbia—</i>		
Prince Rupert.....	\$ 6 50	
	<hr/>	6 50
Total expenditure.....	\$	459 02

DETAILED EXPENDITURE FOR SPECIAL NURSING.

<i>Nova Scotia—</i>		
Advocate Harbour.....	\$ 30 00	
Canso.....	15 00	
Digby.....	10 00	
Gabarus.....	6 00	
Margaretsville.....	432 43	
North Sydney.....	122 50	
Port Hawkesbury.....	28 00	
Sandy Cove.....	21 00	
Sydney.....	6 50	
White Haven.....	42 85	
	<hr/>	\$ 624 28
<i>British Columbia—</i>		
Victoria.....		21 45
Total expenditure.....	\$	645 73

DETAILED EXPENDITURE FOR BURIALS.

<i>Nova Scotia—</i>		
Halifax.....	\$ 16 00	
Sydney.....	25 00	
	<hr/>	\$ 41 00

SESSIONAL PAPER No. 21

DETAILED EXPENDITURE FOR MEDICAL ASSISTANCE.

Nova Scotia—

Margaretsville.....	\$139 00	
North Sydney.....	255 00	
Parrsboro.....	5 00	
Pictou.....	5 00	
Sandy Cove.....	20 00	
White Haven.....	44 00	
Yarmouth.....	10 00	
	<hr/>	\$ 478 00

New Brunswick—

Dalhousie.....	\$ 5 25	
Douglastown.....	10 00	
	<hr/>	15 25
		<hr/>
		\$ 493 25

DETAILED EXPENDITURE FOR FURNITURE, BEDDING AND OTHER SUPPLIES

Nova Scotia—

Louisburg marine hospital.....	\$ 48 25	
Lunenburg marine hospital.....	26 70	
North Sydney.....	28 84	
Sydney marine hospital.....	162 25	
Yarmouth marine hospital.....	106 87	
	<hr/>	\$ 372 91

New Brunswick—

Douglastown marine hospital.....	\$ 56 31	
	<hr/>	56 31

Total expenditure.....	\$ 429 22
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MISCELLANEOUS.

Freight and express charges.....	\$ 6 46	
Printing and stationery.....	469 51	
Medical Superintendent's travelling expenses.....	294 85	
	<hr/>	\$ 770 82

LETTERS AND MEMORANDA SENT FROM THIS OFFICE DURING 1912-13.

Total.....	1,843
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SESSIONAL PAPER No. 21

TABULAR Statement showing diseases for which Seamen received treatment during 1912-1913—*Continued.*

LOCAL DISEASES—*Continued.*Diseases of the digestive system—*Con.*

Ulcer of rectum.. . . .	1
Hemorrhoids.. . . .	28
Hepatitis.. . . .	5
Jaundice.. . . .	5
Abcess of liver.. . . .	1
Calculi of liver.. . . .	2
Cancer of liver.. . . .	1
Biliary colic.. . . .	1
Hernia.. . . .	29
Peritonitis.. . . .	8
Dyspepsia.. . . .	71
Dropsy.. . . .	3

Diseases of the lymphatic glands, 33—

Adenitis.. . . .	32
Goitre.. . . .	1

Diseases of the urinary system, 71—

Acute nephritis.. . . .	16
Bright's disease.. . . .	6
Calculi in kidneys.. . . .	1
Calculi in ureter.. . . .	1
Hematuria.. . . .	1
Albuminuria.. . . .	2
Lithuria.. . . .	2
Pyelitis.. . . .	3
Cystitis.. . . .	37
Renal colic.. . . .	2

Diseases of the generative system, 97—

Urethritis.. . . .	7
Stricture.. . . .	2
Prostatitis.. . . .	1
Phimosis.. . . .	9
Paraphimosis.. . . .	4
Epididymitis.. . . .	3
Chancroids.. . . .	23
Orchitis.. . . .	30
Varicocele.. . . .	9
Hydrocele.. . . .	9

Diseases of the organs of locomotion, 137—

Inflammation of the bones, 10—	
Osteitis.. . . .	7
Periosteitis.. . . .	2
Caries.. . . .	1

Inflammation of the joints, 35—

Bursitis.. . . .	8
Synovitis.. . . .	27

Myalgia, 92—

Lumbago.. . . .	68
Sciatica.. . . .	24

Diseases of the connective tissues, 193—

Cellulitis.. . . .	76
Abcess.. . . .	110
Gangrene.. . . .	2
Edema.. . . .	5

Diseases of the skin, 151—

Erythema.. . . .	1
Urticaria.. . . .	2

Diseases of the skin—*Con.*

Eczema.. . . .	32
Impetigo.. . . .	3
Herpes.. . . .	7
Psoriasis.. . . .	1
Acne.. . . .	2
Chillblains.. . . .	5
Carbuncle.. . . .	20
Ulcers.. . . .	104
Boils.. . . .	66
Sycosis.. . . .	3
Frost bites.. . . .	5

Injuries, 497—

General injuries, 90—

Burns and scalds.. . . .	52
Multiple injuries.. . . .	37
Shock.. . . .	1

Local injuries, 407—

Rupture of muscles.. . . .	5
Wounds of muscles.. . . .	12
Strain of muscles.. . . .	5
Fracture of skull.. . . .	5
Concussion of brains.. . . .	3
Injuries to eyelids.. . . .	16
Injuries to neck.. . . .	8
Injuries to chest.. . . .	4
Fracture of ribs.. . . .	31
Sprains of back.. . . .	9
Injuries to back.. . . .	10
Injuries to abdomen.. . . .	3
Injuries to upper extremities.. . . .	31
Sprains of shoulder.. . . .	5
Sprains of elbow.. . . .	2
Sprains of wrist.. . . .	27
Sprains of hand.. . . .	4
Fracture of clavicle.. . . .	13
Fracture of humerus.. . . .	12
Fracture of radius.. . . .	2
Fracture of ulna.. . . .	2
Fracture of radius and ulna.. . . .	6
Fracture of finger bones.. . . .	7
Dislocation of shoulder.. . . .	7
Dislocation of fingers.. . . .	3
Injuries to lower extremities.. . . .	81
Sprained hip.. . . .	1
Sprained knee.. . . .	8
Sprained ankle.. . . .	32
Sprained foot.. . . .	5
Fracture of femur.. . . .	8
Fracture of tibia.. . . .	5
Fracture of fibula.. . . .	3
Fracture of tibia and fibula.. . . .	9
Fracture of spine.. . . .	1
Fracture of pelvis.. . . .	1
Fracture of patella.. . . .	9
Fracture of bones of foot.. . . .	5
Malingering.. . . .	7
Incomplete reports.. . . .	28

Total number of seamen treated, 3,187.

APPENDIX No. 9.

REPORT OF THE WRECK COMMISSIONER.

OTTAWA, June 9, 1913.

A. JOHNSTON, Esq.,
Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit my annual report of investigations held during the fiscal year, 1912-13, into causes of wrecks and casualties, as well as statements of wrecks and casualties reported as having occurred to British, Canadian and Foreign sea-going vessels in Canadian waters, and to Canadian sea-going vessels in other waters, from January 1, 1912, to December 31, 1912, and of these reported as having occurred in inland waters in the same period.

Formal investigations during the year.. . . .	34
Preliminary inquiries during the year.. . . .	22
Departmental inquiries during the year.. . . .	2
	—
Total.. . . .	58

I have the honour to be, sir,
Your obedient servant,

H. L. G. LINDSAY,
Wreck Commissioner.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and Foreign vessels, held in Canada during the fiscal year 1912-13.

Name of Ship.	Registered Port.	Remarks.
A. W. Perry..... and Albert J. Lutz.	Halifax, N.S..... Digby, N.S.	On May 16, collided off Little Hope, N.S. Formal investigation was held at Halifax, on October 3, by Commander Lindsay. Both masters and first mate of <i>A. W. Perry</i> were censured, inasmuch as speed of the vessels was excessive, considering dense fog at time of accident.
Amelia.....	Magdalen Islands.....	On June 7, grounded at Boar's Head, N.S. Preliminary inquiry was held at Yarmouth, on June 8, by Captain Murphy, and a formal investigation ensued, being held at Halifax, on July 8, by Captain Lugar. Master was found alone to blame for the grounding, and his certificate was suspended for three months.
Atlantic	Lunenburg, N.S	On June 12, grounded in Halifax harbour. Preliminary inquiry was held at Halifax, on June 14, by Captain Lugar. The decision arrived at was that the accident was due to carelessness or ignorance on the part of the mate, who had charge of the vessel at time of grounding. Formal investigation was recommended but could not be held, crew having dispersed.
Adiramled	Montreal.	On June 18, foundered in lake Ontario, near Stoney island. Formal investigation was held at Montreal, on August 16, by Commander Lindsay. The decision arrived at was that the foundering was due to the fact that the vessel was in an unseaworthy condition and overloaded with deck cargo. Master was censured.
Amelia.....	Magdalen Islands.....	On August 8, stranded at Clark's Harbour, N.S. Preliminary inquiry was held at Yarmouth, on August 15, by Captain Murphy. The decision arrived at was that the accident was due to the Hospital Reef buoy not being in position.
Bengore Head.....	Belfast.	On October 5, stranded near Flower island, Newfoundland. Formal investigation was held at Quebec, on October 17, by Commander Lindsay. The decision arrived at was that the master showed negligence, and was primarily to blame for the stranding. His certificate was suspended for three months. Second officer was also found responsible and his certificate was suspended for nine months.
Bellona.....	Dundee.	On October 31, stranded at Upper Traverse, St. Lawrence river. Formal investigation was held at Quebec, on November 19, by Commander Lindsay. The decision arrived at was that the stranding was due to erratic navigation by the pilot, and his license was cancelled. Master was found to blame for leaving vessel in charge of first mate, who had no experience in navigating St. Lawrence river, and his certificate was suspended for three months. First mate was censured.
Chelohsin.....	Vancouver.....	On April 1, grounded in Skeena river, B.C. Preliminary inquiry was held at Vancouver, on June 1, by Captain Eddie, and a formal investigation ensued, being held at Vancouver, on July 13, by Captain Gaudin. No official finding rendered herein as yet.
Camosun.....	Vancouver	On May 9, grounded in the vicinity of Dall Patch, Seaforth channel, B.C. Preliminary inquiry was held at Vancouver, on May 28, by Captain Eddie. Master and chief officer were exonerated.
Carmelia..... and Barge "Accommodation."	Montreal..... Sorel.	On May 18, collided near Isle de Grace, St. Lawrence river. Preliminary inquiry was held at Sorel, on June 10, by Captain Riley. Captain of tug <i>Carmelia</i> was cautioned. Engines were out of order on his vessel.
Canada	Quebec.....	On August 9, collided off Grand River, gulf St. Lawrence. Fishing boat was sunk and one man drowned. Formal investigation was held at Campbellton, on September 24, by Commander Lindsay. The decision arrived at was that the accident was due to the fact that no lights, fog-signal or look-out were in evidence on fishing boat. Master of <i>ss. Canada</i> was exonerated.

4. GEORGE V., A. 1914

STATEMENT of investigations into wrecks and casualties, &c.—*Continued.*

Name of Ship.	Registered Port.	Remarks.
Chebucto. and Dartmouth.	Halifax... "	On October 22, collided in Halifax harbour. Preliminary inquiry was held at Halifax, on October 25, by Captain Lugar, and a formal investigation ensued, being held by Commander Lindsay, at Halifax, on January 13 and 14. The decision arrived at was that the accident was partially caused by error of judgment on the part of the master of <i>Chebucto</i> , who was severely censured. Master of <i>Dartmouth</i> was also blamed for contributory negligence, and censured.
Cecilia L.	Montreal.....	On November 1, foundered in lake St. Louis, and twelve lives were lost. Formal investigation was held at Montreal, on November 22, by Commander Lindsay. The decision arrived at was that no blame was attached to any person, deck cargo having shifted from strong wind.
City of Sydney... and Douglas H. Thomas.	Sydney, C.B.	On November 13, collided in Sydney harbour, C.B., and five lives were lost. Formal investigation was held at Sydney, on December 5, by Captain Lugar. Masters of both vessels were found to blame for the accident. Master of <i>City of Sydney</i> was severely censured, and certificate of master of <i>Douglas H. Thomas</i> was suspended for three months.
Cheslakee	Vancouver.....	On January 7, foundered in Van Anda harbor, B.C., and seven lives were lost. Formal investigation was held at Vancouver, on January 20, by Captain Robertson, and at Victoria on February 6. The decision arrived at was that the accident was due to proper load line not being assigned to that vessel, when coasting certificate granted.
Dufferin	Halifax.....	On June 6, collided at entrance to Halifax harbour. Preliminary inquiry was held at Halifax, on June 12, by Captain Lugar, and a formal investigation ensued, being held by Commander Lindsay, at Halifax, on July 23, 1912, and January 15, 1913. Masters of both vessels were exonerated from all blame.
and Lavengro.	Shelburne, N.S.	
Dundurn.....	Hamilton.....	On September 9, collided in Soulanges canal. Formal investigation was held at Montreal, on September 23 and October 1 and 2, by Commander Lindsay. The decision arrived at was that the <i>Dundurn</i> was to blame for the accident, and her master was censured.
and Port Colborne.	Newcastle.	
Earl Grey.....	Ottawa.....	On April 17, stranded near river John, Northumberland strait. Formal investigation was held at Pictou, N.S., on April 23, by Captain Demers. The decision arrived at was that master committed error of judgment in proceeding at full speed in dense fog, without sounding, and his certificate was suspended for three months. Pilot was found guilty of negligence in navigating vessel, and reported to Pilotage Commissioners of Pictou, for action. Second officer was found inexperienced to occupy such responsible position.
Energy.....	Lunenburg, N.S.	On June 12, stranded at Cranberry Head, C.B. Preliminary inquiry was held at North Sydney, on June 22, by Captain Lugar. The decision arrived at was that the stranding was due to careless navigation on the part of the master; but, as he was not certificated, no further action was taken.
Empress of Britain.....	Liverpool, G.B.. ...	On July 27, collided off Gaspé coast. Formal investigation was held at Quebec, on August 1 and 2, by Commander Lindsay. The decision arrived at was that the <i>Empress of Britain</i> was alone to blame, owing to her excessive speed prior to collision. Master was censured, but, on account of his previous good record and his conduct after the accident, his certificate was not dealt with.
and Helvetia.	"	
Eric.....	Cardiff ...	On August 14, stranded on south side of Sable island. Formal investigation was held at Halifax, on August 27 and 28, by Commander Lindsay. The decision arrived at was that the stranding was due to overconfidence of master, and his certificate was suspended for three months.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties, &c.—*Continued.*

Name of Ship.	Registered Port.	Remarks.
Evelyn.....	West Hartlepool, G.B.	On January 9, stranded and subsequently lost, in Louisburg harbour, C.B. Formal investigation was held at Halifax, on January 18 and 22, by Commander Lindsay. The decision arrived at was that the accident was due to error of judgment on the part of the master, for remaining at anchor on lee shore too long; but, considering rough voyage, his certificate was not dealt with. Louisburg pilots were severely censured for not going off to ship when signalled for.
Fielding (dredge) and T. W. Cooper.	(American).	On May 18, collided in St. John harbour, N.B. Formal investigation was held at St. John, on August 21 and 22, by Commander Lindsay. Master of tug <i>Wasson</i> , which was towing schooner <i>T. W. Cooper</i> , was found at fault and was severely censured. Pilot of dredge <i>Fielding</i> was also found at fault and censured.
Grand Manan..... and American Dredge.	Liverpool.....	On June 26, collided in St. Croix river, N.B. Formal investigation was held at St. Stephens, on July 24 and 25, by Commander Lindsay. Master of <i>Grand Manan</i> was found entirely free from blame for the collision. Evidence from crew of dredge could not be obtained, owing to her belonging to United States.
Gerona.....	Picton, Ont.....	On July 13, stranded near Nun's island, Lachine rapids. Preliminary inquiry was held at Montreal, on July 15, by Captain Riley. The decision arrived at was that the stranding was due to error of judgment on the part of pilot. Formal investigation was not recommended.
Gladstone.....	(Norwegian).....	On November 5, stranded at St. Lawrence, island of Orleans. Formal investigation was held at Quebec, on November 20, by Commander Lindsay. Pilot was found to blame for stranding, and his license was cancelled. Captain was reported to Norwegian Government for action.
Halifax and Glenville (barge).	Halifax.....	On January 6, collided in Halifax harbour. Formal investigation was held at Halifax on January 13 and 20, by Commander Lindsay. Master of <i>Halifax</i> was blamed for not having better lookout kept, and master of <i>Scottsman</i> , towing barge <i>Glenville</i> , was censured for not showing proper lights on his tug.
Inishowen Head.....	Belfast.....	On October 25, stranded on south side of east end of the Middle Ground Traverse, St. Lawrence river. Formal investigation was commenced at Montreal, on May 8, by Commander Lindsay, and indefinitely postponed.
Jessie Ashley.....	Maitland, N.S.....	On June 3, stranded on Boss Point, N.S. Preliminary inquiry was held at Joggins Mines, on June 18, by Captain Lugar. The decision arrived at was that the stranding was due to deviation of compass. Master was found to blame for having neglected to use the lead, but, as he held no certificate, no further action was taken.
Keystorm.....	Newcastle.....	On October 26, foundered in the upper St. Lawrence river. Formal investigation was held at Montreal, on November 1, by Commander Lindsay. Captain was found to have shown lack of judgment in allowing mate, having limited experience, to take charge of vessel in that particular dangerous locality, and his certificate was suspended for twelve months. Mate's certificate was suspended for twenty-four months, on account of his lack of initiative in not calling master and stopping engines when he lost his bearings.
La Canadienne.....	Ottawa.....	On June 20, collided with locks of Welland canal, and foundered. Formal investigation was held at Port Dalhousie, on July 3, by Commander Lindsay. The decision arrived at was that master was alone to blame for accident, and he was severely censured. His certificate was not dealt with on account of having been handicapped by having inexperienced deck hands.
Lady of the Lake.....	Winnipeg.....	On June 28, struck rock in Winnipeg river. Preliminary inquiry was held at West Selkirk, on August 20, by Captain Thorardson. Master was exonerated. Formal investigation was not recommended.

4 GEORGE V., A. 1914

STATEMENT of investigations into wrecks and casualties, &c.—*Continued.*

Name of Ship.	Registered Port.	Remarks.
Lake Champlain.....	Liverpool	On September 3, grounded in St. Lawrence river, near Montreal. Formal investigation was held at Montreal, on September 6, by Commander Lindsay. The decision arrived at was that the grounding was due to error of judgment on the part of pilot.
Monitor and Fingal.....	.....	On March 26, collided in First Narrows, Vancouver, B.C. Preliminary inquiry was held at Vancouver, on June 20, by Captain Eddie. Master of <i>Monitor</i> was blamed for running his vessel at excessive speed, considering the locality. Formal investigation was not considered necessary.
Monica A. Thomas.....	Halifax	On September 4, was destroyed by fire at Louisburg, C.B. Preliminary inquiry was held at Louisburg, on October 11, by Captain Sutherland. The conclusion arrived at was that the accident was due to gasoline tanks being improperly fitted with filling pipes from deck. No one to blame.
Mapleton.....	Sunderland	On October 11, grounded in Montreal harbour. Formal investigation was commenced at Montreal, on November 28, by Commander Lindsay. Not yet completed.
Montreal and Lel	Montreal	On November 8, collided near island of Orleans, St. Lawrence river. Schooner <i>Lel</i> was sunk and one man drowned. Formal investigation was held at Montreal, on May 23 and 27, by Commander Lindsay. The decision arrived at was that the accident was due to heavy gale blowing at the time. Both masters and pilot were exonerated.
Mayflower.....	Ottawa.....	On November 12, wrecked near Barry's bay, Ont., and nine lives were lost. Departmental inquiry was held at Ottawa, on December 6, by Mr. R. A. Pringle, K.C. The decision arrived at was that vessel was running contrary to law, not having certificate of Steamboat Inspector, and without qualified master.
Mansfield and Glen Isle.	Ottawa.....	On October 24, collided in Ottawa river, near Rockcliffe. Formal investigation was held at Ottawa, on June 20, by Commander Lindsay. Both masters were found at fault. They were censured and cautioned to be more careful in future, in regard to the rules of the road.
Oscar	Victoria.....	On January 15, took fire and blew up in Nanaimo harbour, B.C. Preliminary inquiry was held at Victoria, on January 30, by Captain Eddie, and a formal investigation ensued, being held at Vancouver and Nanaimo, in February, by Captain Robertson. No negligence was attributed to the master or any member of the crew for the accident.
Prince John	Prince Rupert	On May 19, grounded at entrance to Massett harbour, B.C. Preliminary enquiry was held at Victoria, on May 29, by Captain Eddie. The conclusion arrived at was that the accident was not caused by any fault of master, but by unfortunate circumstances over which he had no control.
Rapids Prince	Montreal	On July 29, struck bottom in Lachine rapids, and nearly collided with <i>Empress</i> . Preliminary inquiry was held at Montreal, on August 2 and 3, by Captain Riley. Accident found due to steam steering gear on <i>Rapids Prince</i> becoming jammed and thereby unmanageable; therefore, no one to blame.
Royal George.....	Toronto	On November 6, stranded near island of Orleans, St. Lawrence river. Formal investigation was held at Quebec, on Dec. 3, 4 and 5, by Commander Lindsay. The decision arrived at was that the accident was due to over confidence on the part of pilot as to his position, and his reckless navigation, in regard to speed; therefore, his license was suspended for three years. Master was found unjustified for not being on bridge, and his certificate was suspended for twelve months. Chief officer's certificate was suspended for three months, for lack of initiative in not calling master when lights were not seen when they should have been.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties, &c.—*Continued.*

Name of Ship.	Registered Port.	Remarks.
Storm King and Royal City.		On March 21, collided in Second Narrows, Burrard inlet, B.C. Preliminary inquiry was held at Vancouver, on April 15, by Captain Eddie, and a formal investigation ensued, being held at Vancouver, on June 20, by Captain Gaudin. Both masters were severely censured—master of <i>Royal City</i> for not having the regulation lights properly placed, and master of <i>Storm King</i> for rash, negligent navigation.
Strathlorne	Halifax	On May 5, stranded off Margaree, C.B. Preliminary inquiry was held at Halifax, on May 14, by Captain Lugar. The decision arrived at was that master did not exercise proper judgment in navigating his vessel; also that the range lights and marks at Margaree are misleading and do not indicate the proper channel.
St. Pierre Miquelon and Lasca (yacht).		On August 13, yacht <i>Lasca</i> was nearly run down by steamer thought to be the <i>St. Pierre Miquelon</i> , in Halifax harbour. Preliminary inquiry was held at Halifax, on June 11, by Captain Lugar. The evidence did not support the assertion that it was the <i>St. Pierre Miquelon</i> which was navigated in reckless manner; therefore, no formal investigation necessary.
Sinbad	Newcastle	On October 1, stranded at Cheticamp, C.B. Formal investigation was held at Montreal, on October 16, by Commander Lindsay. The decision arrived at was that the stranding was due to vessel striking an unknown and unmarked shoal. Master was exonerated from blame for casualty.
Urbye	(Norwegian)	On April 10, wrecked near Port Beckerton island, N.S. Preliminary inquiry was held at Halifax, on April 15, by Captain Lugar, and a formal investigation was held by Commander Lindsay, at Halifax, on May 30. Master was found at fault and reported to Norwegian Government for action.
Uranium	London	On January 12, stranded at Chebucto Head, N.S. Formal investigation was held at Halifax, on January 21 and 22, by Commander Lindsay. Master was found guilty of negligence and his certificate was suspended for three months.
Vadso	Victoria	On October 13, stranded at Reef Point, B.C. Preliminary inquiry was held at Vancouver, on November 6, by Captain Eddie, and a formal investigation was held at Victoria, on January 8, by Captain Robertson. The decision arrived at was that master committed error of judgment in not allowing for strength of ebb tide on his port bow; but, on account of his good record, his certificate was not dealt with.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 1, 1912.

SEA-GOING WRECKS.

Date of Casualty.	Name of ship Off. No.	Age.	Registered Port.	How rigged Iron or Wood, Steam or Sail.	Reg- ister ton- nage.	Port sailed from Port bound to.	Place where Casualty happened.	Particulars of casualty. Name of Master.	Lives lost.	Remarks.
1912.										
Jan. 6.	Arkona..... 126,815	2	Bridgetown..... Bbdoes.	Schooner.. Wood Sail	143-95	Halifax, N.S.-Brid- getown, Bbdoes.	Lat. 39° 00' N..... Long. 61° 50' W..... North Atlantic 20 miles of Sheet Harbour, N.S.	Sprang a leak..... Edm. Tanner.	.....	Partial ship, \$2,300, cargo, \$700.
Jan. 9.	Arthur H. Wight. 116,911	7	Lunenburg, N.S.. Lunenburg, N.S.	Schooner.. Wood Sail	99-24	Lunenburg, N.S.- Louisburg, N.S.	20 miles of Sheet Harbour, N.S.	Loss of boats, jibs and gear. M. Corkum.	...	Part, \$600.
Jan. 19.	Atlantic..... 122,143	6	Lunenburg, N.S.. Lunenburg, N.S.	Schooner.. Wood Steam	67	Halifax, N.S. Yar- mouth, N.S.	Halifax Harbour ...	Collision .. C. Stevenson.	.....	No loss.
Jan. 28.	Alcaea..... 107,657	12	Port Medway, N.S. Port Medway, N.S.	Schooner.. Wood Sail	99	Bridgewater, N.S.- New York.	128 miles S. of Cape Sable.	Loss of sails .. W. S. Zwicker.	....	Part.
Mar. 7.	Alberni..... 126,072	4	Vancouver, B.C.. Vancouver, B.C.	Wood Steam	19	Vancouver, B.C.- Pender Harbour, B.C.	Pender Harbour, B.C.	Stranding .. H. Lytte.	.....
Mar. 29.	Annie Blanche..... 103,027	17	Parrsboro, N.S.. Parrsboro, N.S.	Schooner.. Wood Sail	68	Parrsboro, N.S.- Machias Port, Me.	Off Spencer's Island, N.S.	Foundering .. R. Newcomb.	.....	Total \$1,200.
April 15.	Aldine..... 88,595	29	St. Andrews, N.B. St. Andrews, N.B.	Schooner.. Wood Sail	299	St. John, N.B.-New York.	Fisherman's Island. U.S.A.	Stranding .. T. A. French.	.....	Total \$3,500.
May 16.	A. W. Perry. 106,075	15	Halifax, N.S..... Halifax, N.S.	Schooner.. Steel Steam	957	Halifax, N.S.-Bos- ton, Mass.	Near Little Hope Island, N.S.	Collision .. F. H. Haines.	....	No loss.
June 7.	Amelia..... 104,069	18	Magdalen Islands. Magdalen Islands.	Schooner.. Iron Steam	113	St. John, N.B.-Yar- mouth, N.S.	Boars Head, Bay of Fundy.	Stranding .. Wm. W. Horsy.	.....	Part \$3,500.
June 12.	Atlantic..... 122,143	6	Lunenburg, N.S.. Lunenburg, N.S.	Schooner.. Wood Steam	67	Clark's Harbour, N.S.-Halifax, N.S.	Halifax Harbour, N.S.	Stranding .. A. Sivanson.	.....	No loss.

SESSIONAL PAPER No. 21

July 4..	Alaska. 77,897	28	Parrsboro, N.S.	Schooner. Wood Sail	118	Noel, N.S.	Bay of Fundy.	Stranding. A. Tower.	Part \$3,000.
July 12..	Arelight 107,182	14	Charlottetown P.E.I.	Schooner. Wood Sail	102	Halifax, N.S.-Char lottetown, P.E.I.	New York.	Sprung a leak and abandoned.	Total
July 17..	Arthur J. Parker. 126,286	3	St. Johns, N.B.	Schooner. Wood Sail	119	St. John, N.B.-New Haven, Conn.	North Atlantic Ocean	Collision.	No loss.
Aug. 8..	Anelia. 101,069	18	Magdalen Islands.	F. & A. Steel Steam	113	Halifax, N.S. Yar mouth, N.S.	Clark's Harbour, N.S.	Stranding A. M. O'Hara.	Total \$4,000.
Aug. 12..	Arizona. 71,030	36	Yarmouth, N.S.	Schooner. Wood Sail	85	Rockport, Me. Bly- mpton.	Cranberry Island, N.S.	Stranding J. J. Neledan.	Part \$2,000.
Sept. 15..	Athena. 92,498	21	Windsor, N.S.	Bgte. Wood Sail	663	Mobile, U.S.A. Cienfuegos, Cuba.	Caribbean Sea.	Stranding A. C. Larkin.	Part \$12,000.
Oct. 14..	Astarte 128,253	3	Glasgow.	Schooner. Steel Steam	717	Parrsboro, N.S. St. John, N.B.	Parrsboro, N.S.	Collision. J. Young.	Part \$2,000.
Oct. 27..	Athena. 92,498	21	Windsor, N.S.	Bgte. Wood Sail	66	3 Mobile, U.S.A. Cienfuegos, Cuba.	Havana Harbour.	Damaged by fire. A. C. Larkin.	Part.
Oct. 30..	Archie	5	Vancouver, B.C.	Wood Sail	11	Vancouver, B.C. Turnbull Cove, B.C.	Turnbull Cove, B.C.	Sprung a leak. C. J. Crabb.	Part.
Nov. 13..	Ada D. Bishop. 130,501	1	Shelburne, N.S.	Schooner. Wood Sail	93-43	Burns, Nfld.-Glen cester, U.S.A.	St. Pierre Island, No. Atlantic.	Stranding J. P. Kirby.	Part.
Nov. 17..	Arkona 126,815	2	Bridgetown, Bdos.	Schooner. Wood Sail	143-75	Liverpool Savannah Ja.	Savannah, Jamaica.	Stranding J. N. Spinagle.	Total. Ship, \$900; cargo, \$1,400.
Nov. 28.	Abraham Lincoln.	48	Charlottetown, P.E.I.	Schooner. Wood Sail	58	Prince Edward Island-Sydney, N.S.	North entrance of Strait of Canso, N.S.	Stranding J. Murray.	Total.
Nov. 29.	Advance 112,060	10	Windsor, N.S.	Schooner. Wood Sail	291	Halifax, N.S. Riode Janeiro.	Lat. 42. 16' N. Long. 60. W. No. Atlantic.	Loss of sails. F. L. Whally.	Part.
Dec. 25..	Aldine. 112,115	9	Lunenburg, N.S.	Schooner. Wood Sail	99-33	Boston, Mass. St. Pierre Miquelon.	Rangait Island, St. Pierre Miqu.	Stranding R. Schneider.	Total. Ship, \$4,500; cargo, \$10,000.
Feb. 12..	Bangor	21		Barge. Wood	511	Tacoma, U.S.A. Tacoma, U.S.A.	Hlow Sound, B.C.	Foundering. W. Philips.	Part. \$2,000.
Feb. 23..	Bravo. 103,497	17	Paspheiac, P.Q.	Schooner. Wood Sail	147	Halifax, N.S. New York.	Brooklyn, N.S.	Stranding J. Evans.	Part. Ship, \$1,200; cargo, \$300.
Mar. 16..	Bonavista. 87,966	28	Montreal	Schooner. Iron Steam	837	St. John, N.B. Louisburg, N.S.	Bay of Fundy.	Stranding J. C. McCarthy.	Total. \$25,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 1, 1912.—*Continued.*

SEA-GOING WRECKS.—*Continued.*

Date of Casualty.	Name of Ship Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Register Tonnage	Port sailed from Port bound to.	Place where Casualty happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Remarks.
May 21..	Bonus..... 94,647	24	Halifax, N.S.....	Schooner.. Wood Sail	86 14	Bay Roberts, Nfld. Sydney, N.S.	Off Cape St. Francis. No. Atlantic.	Collision with iceberg	.....
July 14..	Baltic..... 107,752	65	Charlottetown, P.E.I.	Schooner.. Wood Sail	64	Pictou, N.S.—Pictou, N.S.	Charlottetown Har- bour, P.E.I.	Collision.....	.....	Part. \$300.
Sept. 13..	Bartholdi..... 10,004	21	Annapolis, N.S.....	Schooner.. Wood Sail	299	Pensacola, Gulf of Mexico—Pensacola.	Gulf of Mexico..	Loss of spars..	.....	J. N. Chute.
Sept. 24..	Benefit..... 107,566	12	Parrsboro, N.S.....	Schooner.. Wood Sail	299	..... Windsor, N.S.	Lat. 36°23'..... Long. 75°01' Atlantic ocean	Sprang a leak..... D. R. Christopher.	.....	Part. \$300.
Oct. 5..	Bengore Head..... 90,101	28	Belfast	Schooner.. Iron	1619	Escuminas, Belfast.	Double Ledge, Nfld.	Stranding ..	.....	Part.
Oct. 9..	Beulah..... 94,742	24	St. John, N.B.....	Schooner.. Wood Sail	81	St. John, N.B.—Bos- ton, Mass.	John's Island, U.S.A	Stranding ..	.....	Total. Ship, \$400; cargo, \$1,200.
Oct. 20	Bobs..... 82,747	18	Dorchester, N.B.....	Schooner.. Wood Sail	97	Clements Port, N.S.— Boston, Mass.	Bay of Fundy.....	Head chains and bow- sprit carried away.	.....	Part.
Nov. 3..	Bute..... 116,407	8	Victoria, B.C.....	Tug..... Wood Steam	26	Victoria, B.C.—Royal Bay, B.C.	Royal Bay, B.C.....	Stranding ..	.....	Part.
Nov. 23..	Bessie G..... 85,622	23	Parrsboro, N.S.....	Schooner.. Wood Sail	69	Windsor, N.S.—Bos- ton, Mass.	Minas Channel, N.S.	Collision.....	.....	Part., \$600.
Dec. 23..	Benefit..... 107,566	12	Parrsboro, N.S.....	Schooner.. Wood Sail	229	..... Santiago, Cuba.	Lat. 36°23'N..... Long. 75°01' N. Atlantic ocean.	Loss of sails..... D. R. Christopher.	.....	Part., \$300.
Dec. 26..	Bohemia..... 116,444	9	St. John's, Nfld.....	Schooner.. Wood Sail	74. 73	St. Lawrence, Nfld.— Halifax, N.S.	Point Micau Ledges	Stranding.....	.....	Part.

SESSIONAL PAPER No. 21

Feb. 11..	Caledonia.....	116,597..	6	Bridgetown, Barbadoes.	Schooner.. Wood	190 Lunenburg, N.S.— New York.	North Atlantic ocean	Foundering. C. Schrader.	.....	Total, \$8,500.
Feb. 15..	Collector.....	107,122	13	Lunenburg, N.S.	Schooner.. Wood	99 La Have, N.S.— Boston, Mass.	Boston harbour	Stranding. E. A. Wilkie.	.....	Light damage.
Apr. 1..	Chelohsin.....	130,805	1	Vancouver, B.C.	Schooner.. Steel	597 Vancouver, B.C.— Prince Rupert, B.C.	North Skeena Passage, B.C.	Stranding. G. Cowper.	.....	Part., \$30,000.
Aug. 4..	Charterhouse.....	104,892	17	London, Eng.	Steamer.. Steel	1,928 Manchester, Eng.— Chicoutimi, P.Q.	Heath Point, Anticosti.	Stranding. Robt. Waite.	.....	Light damage.
Aug. 11..	Crescent.....	100,345	10	Maitland, N.S.	Schooner.. Wood	99 Maitland, N.S.— Maitland, N.S.	Machias harbour, U.S.A.	Waterlogged. J. W. Huntley.	.....	Part.
Sept. 12..	Calabria.....	80,373	31	St. John's, Nfld.	Schooner.. Wood	451 St. John, N.B.— New York.	Weekapesett Reef, U.S.A.	Stranding.	.....	Part., \$1,000.
Oct. 21..	Clara M.....	100,484	20	Sydney, N.S.	Schooner.. Wood	52 Richibucto, N.B.— Canso, N.S.	Entrance to Canso harbour.	Stranding. S. Osborne.	.....	Part., \$250.
Oct. 22..	Chebucto.....	108,683	15	Halifax, N.S.	Sail	184 Dartmouth, N.S.— Halifax, N.S.	Halifax harbour.	Collision. C. A. Ozon.	.....	No loss.
Nov. 28..	Ceto.....		23		Steamer.. Wood	95 Halifax, N.S.— Halifax, N.S.	Feum Secum, N.S.	Stranding. S. Balsam.	.....	Part.
Dec. 1..	Coast Guard.....	116,651	8	Barrington, N.S.	Sloop.. Wood	49 Clark's Harbour, N.S.— Halifax, N.S.	Off Lockport harbour, N.S.	Tail shaft broken. H. H. Bremen.	.....	Part., \$600.
Dec. 2..	County of Lunenburg.		25	Valparaiso, Chili.	4 masts.. Iron	208715 Valparaiso, Chili— Royal Roads, B.C.	Juan de Fuca Strait, B.C.	Stranding. J. H. Muller.	.....	Part.
Dec. 3..	Conrad S.....	125,964	4	Parrsboro, N.S.	Schooner.. Wood	299 Havana, Cuba.	Edge of Gulf Stream, Atlantic ocean.	Damaged by heavy sea. M. Hagan.	.....	Part., \$1,500.
Dec. 17..	Collector.....	107,122	13	Lunenburg, N.S.	Schooner.. Wood	99 Gaspe, P.Q.— Barbadoes.	Lat. 41° 31' N.— Long. 57° 45' W.— North Atlantic.	Part of rigging carried away. J. Levesque.	.....	Part.
Jan. 4..	Dora.....	90,871	26	Parrsboro, N.S.	Schooner.. Wood	63 Maitland, N.S.— Parrsboro, N.S.	Cobequid Bay, N.S.	Stranding. C. G. Canning.	.....	Part., \$200.
Jan. 7..	Dart.....	108,395	14	London, Eng.	Steamer.. Steel	2,056 Hamburg— Copenhagen.	Lat. 49° N.— Long. 48° 20' W.— North Atlantic.	Loss of rudder. J. Mitchell.	.....	Part., \$3,000.
Feb. 3..	Dorothy Duff.....	107,104	5	Sydney, N.S.	Schooner.. Wood	152 Carbonar.....	Lat. 43° N.— Long. 43° W.— North Atlantic.	Sprung a leak. E. Burke.	.....

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 1, 1912.—Continued.

SEA-GOING WRECKS: Continued.

Date of Casualty.	Name of Ship Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Register Ton- nage.	Port sailed from. Port bound to.	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
Mar. 20.	Dansyre 98,965.	20	Victoria, B.C.	Steel Steam	2,056	Newcastle, G.B.— San Francisco.	Lat. 38° 54' S. Long. 160° 49' W. South Pacific.	Damaged by heavy sea.	.....	Part. \$40.
June 6.	Dufferin..... 116,896.	7	Halifax, N.S.	Schooner.. Wood	99	Halifax, N.S.— Sherbrooke, N.S.	Halifax Harbour....	Collision..... Wm. Murdock.	.....	Part. \$1,500.
Oct. 11.	Dayspring..... 59,484.	46	Halifax, N.S.	Schooner.. Wood	36-49	Halifax, N.S.— River Bourgeois, N.S.	Entrance to River Bourgeois.	Stranding..... A. Fougere.	.....	Part.
Oct. 22.	Dartmouth..... 90,889.	24	Halifax, N.S.	Schooner.. Wood	196	Halifax, N.S.— Dartmouth, N.S.	Halifax Harbour....	Collision..... N. W. Allen.	.....	Part. \$300.
Jan. 6.	Edna M. Smith....	7	St. John, N.B.	Steam	736	Bear River, N.S.— Buenos-Ayres.	Off Uruguan Coast, South Atlantic.	Loss of deck cargo... J. A. Reid	.....
Feb. 2.	Evolution..... 94,855.	13	Parrsboro, N.S.	Schooner.. Wood	173	..... Liverpool, N.S.	Portsmouth, N.H....	Collision..... D. J. McDonald.	.....
" 3.	Ethel B. Penney...	4	Boston, Mass.	Schooner.. Wood	57	Boston, Mass.— Fishing Grounds.	Near Coffin's Island, N.S.	Boom broken..... Edw. Bishop.	.....	Part. \$100.
Mar. 15.	E. A. Sabean..... 90,839.	11	Port Medway, N.S.	Schooner.. Wood	249	Halifax, N.S.— Boston, Mass.	Lat. 36° N.; Long. 69° 01' W. North Atlantic.	Loss of jib and boat... W. J. Loomer.	.....	Part.
Apr. 17.	Earl Grey..... 126,525.	3	Ottawa, Ont.	Schooner.. Steel	930	Charlottetown, P.E.I.—Pictou, N.S.	Toney River, N.S....	Stranding..... A. Brown.	.....	Part.
" 23.	Evolution..... 94,855.	13	Parrsboro, N.S.	Schooner.. Wood	173	Portsmouth, U.S.A.— Liverpool, N.S.	Bannington Passage, N.S.	Main boom broken... D. J. McDonald.	.....	Part. \$35.
May 4.	E. A. Sabean..... 90,839.	11	Port Medway, N.S.	Schooner.. Wood	249	Boston, Mass.— Barbadoes.	Carlisle Bay, Bldoes.	Collision.....	.....	Part. \$430.

SESSIONAL PAPER No. 21

June 11..	E. Merriam. 80,395.	30	Parrsboro, N.S.	Schooner. Wood Sail	331	St. John, N.B. New York.	Stranding	
" 12..	Energy. 88,536.	28	Lunenburg, N.S.	Schooner. Wood Sail	97	Campbellton, N.B. Sydney, N.S.	Stranding T. Jackson.	Total, \$1,500.
" 14..	Ernest T. Lee. 9,861.		Calais, Me.	Schooner. Wood Sail	139	Vineyard Haven, U.S.A.	Stranding T. H. Rawding.	Part. \$1,000.
July 27..	Empress of Britain 120,940.	6½	Liverpool, G.B.	Schooner. Steel	8,023	Liverpool, G.B. Liverpool, G.B.	Collision	
Aug. 14..	Eric	16	Cardiff	Schooner. Steel	1,789	Cardiff Quebec.	Stranding W. G. Corner.	
" 27..	Ella and Jennie	5	St. Andrews, N.B.	Sloop Iron Sail	25	Grand Manan, N.B. St. John, N.B.	Collision I. Ingolls.	Total, \$3,500.
Oct. 2..	Ethel 85,551.	28	Yarmouth, N.S.	Schooner. Wood Sail	93	Perth Amboy, U.S.A. — Halifax, N.S.	of Foundering ... A. McLeod.	Total ship, \$2,000; cargo, \$1,400.
" 15..	Electra	12	St. John, N.B.	Schooner. Steel	1,949	Rotterdam — Rosario. Bristol Channel	M. P. valve spindle broken. Capt. Butler.	Part.
Nov. 7..	Empress. 107,761	11	Charlottetown, P.E.I.	Schooner. Wood Sail	335	River Jacket, Baie des Chaleurs, — Boston, Mass.	Strung a leak.	Light damage.
Nov. 13..	Erema H.	11	Halifax, N.S.	Schooner.	71	Entrance to Sydney Harbor, N.S.	Stranding	Part, \$260.
Nov. 18..	E. Merriam. 80,395	30	Parrsboro, N.S.	Schooner. Wood Sail	331	St. John, N.B. New York.	Stranding G. C. Wood.	Total, \$2,500.
Dec. 2..	Ethel B. Summer. 100,436	11	Moncton, N.B.	Schooner. Wood Sail	353.45	Shulic, N.S., — Boston, Mass.	Stranding W. Paterson.	Part, \$16,000.
Dec. 27..	Engeria.	4	Gloucester, U.S.A.	Schooner. Wood Sail	66	Gloucester, U.S.A., Liverpool, N.S.	Loss of anchors and cables. J. E. Williams.	Part, \$250.
Mar. 26.	Fingal. 103,152	17	Vancouver, B.C.	Schooner. Wood Steam	60	Vancouver, B.C., Nanaimo, B.C.	Collision J. Finlay.	Part, \$165.
May 25..	Fidalgo 200,817	8	Port Townsend, U.S.A.	Wood Steam	233	Seattle, Wash., Roche Harbor, U.S.A.	Collision J. Graham.	Part, \$200.
June —	Fish Maid 126,278	3	New Westminster, B.C.	Schooner. Wood Gas	9	Prince Rupert, B.C. Prince Rupert Har- bor, B.C.	Burnt J. Thurber.	Part, \$100

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 1, 1912.—Continued.

SEA GOING WRECKS—Continued.

Date of Casualty.	Name of Ship. Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Register Ton- nage.	Port sailed from Port bound to.	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
1912.										
Oct. 27.	Francis A. Rice... 94,821	13	Weymouth, N.S.	Schooner.. Wood Sail	122	Weymouth, N.S. Boston, Mass.	Matineus Island, Me.	Loss of sails J. J. Thibaudan.		Part, \$20.
Dec. 1.	Florence E. Melan- son. 102,032	5	Weymouth, N.S.	Schooner.. Wood Steam	92	Belliveau's Cove, N.S.,—Boston, Mass.	Penobscot Bay, Me.	Stranding .. G. Melanson.		Total:— Ship, \$3,000; cargo, \$600.
Jan. 11.	Gordon M. Hal- kett. 126,664	1	Shelburne, N.S.	Schooner.. Wood Sail	99	Burns, Nfld., —Boston, Mass.	Boston Harbor.	Collision .. J. Jarvis		Part, \$20.
Jan. 14.	Genesee .. 95,522	22	London, Eng.	Schooner.. Steel Steam	1,833	London, Eng., —New-York.	Lat. 48.22 W. Long. 38.51 W. No. Atlantic.	Decks swept away. J. Pollock.		Part, \$500.
Feb. 12.	Glen Rose..... 111,982	10	Vancouver, B.C.	..... Wood	12	Prince Rupert, B.C., —Coastwise.	Prince Rupert Har- bor.	Foundering..... S. A. Tallender.	2	Part \$700.
Feb. 16.	Georgiana Roop... 112,004	6	Annapolis Royal, N.S.	Schooner.. Wood Sail	423.92	Gulf Ports, Moss Point, U.S.A.	Gulf of Mexico.	Stranding..... E. H. Pitman.		Part, \$1,500.
May 14.	Gipsy .. 92,359	15	Parrsboro, N.S.	Schooner.. Wood Sail	33	..... Parrsboro Roads, N.S.	Minas Channel, N.S.	Stranding .. G. Durant.		Part, \$150.
June 26.	Grand Manan 130,245	2	Liverpool, N.S.	Schooner.. Wood Sail	180	St. John, N.B., —St. Stephens, N.B.	St. Croix River, N.B.	Collision .. J. A. Ingersoll.		Part, \$100.
July 4.	Gertir M. Starr... 107,320	11	Halifax, N.S.	Schooner.. Wood	.....	Murray Harbor, P.E.I.,—Gulf St. Lawrence.	15 miles N.W. of East Point, P.E.I.	Foundering..... A. H. Blakely.		Part, \$25.
Oct. 13.	Geneva May..... 111,876	10½	Yarmouth, N.S.	Schooner.. Wood Sail	71.62	Woods Harbor, N.S., —Woods Harbor, N.S.	Off Lockport, N.S.	Loss of sails .. N. Smith.		Part, \$1,100.
Nov. 6.	Gladstone	3	Bergen, Norway	..... Steel Steam	308.76	North Sydney, N.S., —Montreal.	Island of Orleans, P.Q.	Stranding .. H. Jonessen.		Part.

SESSIONAL PAPER No. 21

Nov. 29..	Gertrude.....	10	St. Johns, Nfld....	Schooner..	356.85	St. Lawrence, Nfld.- Gloucester, U.S.A.	Atlantic ocean.....	Loss of sails and part of cargo.	Part ship, \$200. Cargo, \$800.
Dec. 4..	Grace Darling.....	12	Parrsboro', N.S....	Sail	97	Parrsboro', N.S.- Bridgeport, Conn.	Point Judith, U.S.A.	J. Matthews. Stranding.....	Part, \$500.
Dec. 30..	Gram Falls.....	2½	Shelburne, N.S....	Schooner..	113	St. Johns, Nfld.....	Lat. 42° 43'. Long. 52° 10'. North Atlantic.	Damaged by heavy weather.	Part.
Jan. 15..	Hampton.....	6	St. John, N.B....	Wood Sail	115	.....	Indian Town, N.B..	Damaged by ice.....	Part, \$3,000.
Feb. 27..	Hazel Trahey.....	2	Parrsboro', N.S....	Schooner..	145	Boston, Mass.-Parrs- boro, N.S.	Beaver Harbour, N.B.	Stranding.....	Part, \$150.
Mar. 3..	Heathcote.....	14	Sydney, N.S....	Schooner..	1,595	Halifax, N.S.....	Louisburg Harbour, N.S.	Collision.....	No loss.
Mar. 7..	Hazel Dollar.....	8	Victoria, B.C....	Steam Schooner..	2,803- 57	Seattle, Wash.-China	Lat. 52° N..... Long. 167° 24' W.	Rudder broken and deck house carried away.	Part, \$10,000.
May 14..	Henry May.....	58	(American).....	Schooner..	179	Portland, Me.-Shu- lie, N.S.	Apple River, N.S....	Stranding.....	Total, \$2,000.
July 29..	Hustler.....	18	Barrington, N.S....	Schooner..	39	Barrington, N.S.- Clark's Harbour, N.S.	East side of Clark's Harbour.	Stranding.....	Total, \$600.
Sept. 6..	Hungarian.....	11	Glasgow.....	Schooner..	2,873	Liverpool, G.B.- Montreal.	St. Lawrence river..	Steering gear jammed A. Wetteley.	No loss.
Sept 13..	H. C. Carson.....	4	Sydney N.S....	Schooner..	38	.....	Dingwell, N.S.....	Burnt ..	No loss.
Nov. 8..	Holthe.....	22	(Norwegian).....	Bgte.....	1,323	Wedgeport Baha Blanca.	Tusket River, N.S..	Stranding.....	No loss.
Nov. 13..	Harry Wadsworth. 98,777.	19	Middleborough, G. R.	Schooner..	1,474	Bilbao, Spain-New York.	Lat. 41° 20' N..... Long. 56° 50' W. North Atlantic.	Main feed pipe bro- ken. J. A. Kelly.	Part, \$25.
Nov. 28..	Hattie C.....	30	St. John, N.B....	Schooner..	160	Sydney, N.S.....	Bear Island, Strait of Canso, N.S.	Collision.....	No loss.
Feb. 2..	Joan.....	20	Victoria, B.C....	Schooner..	544	Victoria, B.C.....	Burrard Inlet, B.C..	Stranding.....	Light damage.
Mar. 6..	Inca.....	15	London, Eng.....	Steamer..	1,921	New York.	South East of Cape Breton.	Damage by ice.....	Part.
	104,929.			Iron Steam				W. W. J. Beavan.	

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 1, 1912.—Continued.

SEA-GOING WRECKS.—Continued.

Date of Casualty.	Name of Ship. Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Reg- ister Ton- nage.	Port sailed from Port bound to	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
1912.										
Mar. 13	Isleworth..... 132,272.	1	London, Eng.	Schooner. Steel	2,988	Boston, Mass.-Louis- burg, N.S.	Chebueto Head, N.S.	Stranding..... D. O. Redding.	.....	Total, \$6,500.
May 4	Joan..... 100,635.	20	Victoria, B.C.	Steam Wood	544	Victoria, B.C.—Gulf Island Ports.	Provost Passage, B.C.	Stranding..... W. L. Gilchrist.	...	Part.
Aug. 17	Ida M. Barton..... 112,226.	10	St. John, N.B.	Steam Wood	102	St. John, N.B.—Bos- ton, Mass.	10 miles N. W. of Cape Ann, U.S.A.	Loss of sails..... S. Cameron.....	.....	Part.
Oct. 22	Invictus..... 112,001.	8	Annapolis, N.S.	Schooner. Wood	327	St. John, N.B.— New York.	Lat. 41° 50' N..... Log. 69° 37' W. No Atlantic	Part of deck cargo swept away. J. H. Will.	.....	Part., \$10.
Jan. 9	John Harvey..... 127,696.	3	St. John, Nfld.	Schooner. Wood	99	Boston, Mass.— St. Peter, Nfld.	Near entrance to Gabarus, N.S.	Stranding..... J. Kearley.	.....	Total.
Jan.	Jennie E. Duff..... 130,467.	9	Lunenburg, N.S.	Schooner. Wood	99	Turks Island,— Lunenburg, N.S.	Atlantic.....	Stranding..... H. Hemmelman.	.....
Feb. 8	James William..... 103,807.	4	Pictou, N.S.	Schooner. Wood	140	Lunenburg, N.S.— New York.	Nantuckett, U.S.A.	Caught in ice..... Capt. Gatson.....	.....
June 3	Jessie Ashley..... 116,557.	4	Maitland, N.S.	Schooner. Wood	121 51	Maitland, N.S.— Amherst, N.S.	Boss Point, N.S.	Collision..... W. N. Spicer.	.....	Part.
June 27	J. S. Lamprey..... 75,433.		New York	Schooner Wood	250	Windsor, N.S.	Windsor, N.S.	Stranding..... A. T. Murphy.	.....	Part., \$1,400.
Aug. 13	James Ryan..... 83,303.	30	Port Medway, N.S.	Schooner. Wood	48	Campbellton, N.B.	Miramichi..... Bay Preston.....	Stranding..... Capt. Munn.	.....	Total, \$1,200.
Aug. 24	James Grey..... 11,630.	23	Charlottetown, P.E.I.	Schooner. Wood	91	Montague, P.E.I.— Sydney, N.S.— Gaspe, Que.	Magdalen Islands..	Foundering..... W. F. McInnis.	.....	Total.

SESSIONAL PAPER No. 21

Oct.	3.	J. A. Silver. 96,830.	Prince Edward Island.	.....	.....	Shenogue, N. S.	Wrecked	.....	Total.
Nov.	28.	J. Howell Leeds. 76,273.	31 Philadelphia.	Schooner. Wood Sail	391 Maitland, N.S. New York.	Cobequid Bay, N.S.	Stranding M. C. Roope.	.....	Part., \$3,000.
Mar.	10.	Karnoe.	12 Lunenburg, N.S.	Schooner. Wood Sail	97 Halifax, N.S. New York.	60 miles West of Seal Island	Deck Cargo swept away. E. McKin ley.	.....	Part., \$110.
June	16.	Kalevala. 92,676.	24 Sydney, N.S.	Schooner. Wood Sail	100 Sydney, N.S. Vineyard Haven, U.S.A.	Chatham Bar, U.S.A.	Stranding John Ryan.	.....	Total.
Jan.	5.	Lacille. 116,905.	5 Parrsboro, N.S.	Schooner. Wood Sail	164 Elizabeth Port, N.Y.	Hill Point Bar, Mass.	Stranding H. Randall.	.....	Part ship, \$1,800. Cargo, \$116.
Jan.	15.	Lingan. 132,816.	11 West-Hartlepool, Eng.	Steamer. Steel Steam	2,602 Sydney, N.S. Louisburg, N.S.	30 miles S.W. of Sambro W.S.	Rods broken. A. L. Patterson.	.....	Part., \$20.
Jan.	17.	Lady Laurier. 112,399.	93 Ottawa, Ont.	Schooner. Steel Steam	413 Halifax, N.S. Barrington, N.S.	Parrington Passage, N.S.	Stranding C. A. Travis.	.....	Part.
Jan.	..	Lillian. 103,750.	11 Lunenburg, N.S.	Schooner. Wood Sail	83-81 Lunenburg, N.S. British West Indies.	.....	Foundering. E. Ritch.	6	Total ship, \$12,500. Cargo, \$400.
May	11.	Lady Sybil. 85,406.	4 Magdalen Islands.	Steamer. Steel Steam	351 Pictou, N.S. Amherst, N.S.	Near Amherst, N.S.	Stranding E. Ferguson.	.....	No. loss.
June	6.	Lavengro. 12,618.	25 Shelburne, N.S.	Schooner. Wood Sail	269 Shelburne, N.S. Halifax, N.S.	Halifax Harbor.	Collision. H. R. Muir.	.....	Part., \$250.
June	19.	Lowell F. Parks. 130,730.	1 Lunenburg, N.S.	Schooner. Wood Sail	99 La Have, N.S. Placentia, Nfld.	Placentia Ledge, Nfld.	Stranding Perry Parks.	.....	Part.
Aug.	17.	Lewis. 117,021.	8 Sydney, N.S.	Schooner. Wood Sail	99 Sydney, N.S. Halifax, N.S.	Musquodoboit Light, N.S.	Stranding L. G. Cook.	.....	Part., \$150.
Aug.	29.	Lillian M. Richard. 130,811.	1 Lunenburg, N.S.	Schooner. Wood Sail	97-73 La Have, N.S. Cape Broyle, Nfld.	Cape Broyle Harbor, Nfld.	Collision. E. Richard.	.....	Part., \$150.
Sept.	3.	Lake Champlain. 110,650.	12 Liverpool, G.B.	Schooner. Steel Steam	1,714 Liverpool, G.B. Montreal.	Off Long Point. St. Lawrence River.	Stranded. H. S. Kendall.	.....	Part.
Oct.	2.	Lan.	19 London, Eng.	Schooner. Steel Steam	1,634 North Shields, G.B. New York.	Lat. 41° 28' N. Long. 64° 31' W No. Atlanticque.	Rudder post broken. C. J. Rudder.	.....	Part., \$7,000.
Jan.	11.	May Flower. 116,653.	5 Maitland, N.S.	Schooner. Wood Sail	132 Boston, Mass. St. John, N.B.	Point Lepreau, N.B.	Loss of sails. M. Benjamin.	.....	Part., \$200.
Jan.	19.	Majestic. 107,695.	13 Montreal.	..... Steel Steam	156	Indian Town, N.B.	Damaged by fire. Frank Day.	.....	Part., \$3,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1912.—*Continued.*

SEA-GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship. (Off. No.)	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Register Ton- nage.	Port sailed from Port bound to.	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
1912.										
Feb. 23..	Manhasset. 93,247.	10	Boston, Mass.	Schooner. Wood Sail	79	Boston, Mass.— Boston, Mass.	George's Banks.	Loss of sails. J. F. Von Amburg	.....	Part., \$250.
Mar. 15..	M. D. S. 107,306.	11	St. Johns, Nfld. . .	Schooner. Wood Sail	189.73	New York.— Gulf Port, Miss.	St. Martin, N.W. Indies.	Stranding. Chs. Richler.	.....	Total, ship \$500 ; cargo \$800.
Mar. 21..	Malstad.	6	(Norwegian) .. .	Steamer. Iron Steam	2,599	Portland, Me.— Louisburg, N.S.	Louisburg Harbor.	Collision. J. Paulsen.	.....	Part.
Mar. 23..	Mersey. 116,914.	12	Barbadoes.	Schooner. Wood Sail	191	Halifax, N.S.— New York.	20 miles West of Cape Sable.	Sprung a leak. D. Gildist.	.....	Part., \$400.
Mar. 28..	Margaret. 122,123.	5	Halifax, N.S.	Schooner. Wood Steam	99.76	Halifax, N.S.— Pope's Harbor, N.S.	Pope's Harbor, N.S.	Rudder broken. P. J. Cooper.	.....	Part., \$300.
Apr. 8..	Mohocascfield. 127,404.	2	West-Hartlepool, G.B.	Schooner. Steel Steam	2,345	Bremerhaven.— Louisburg, N.S.	White Head, N.S.	Stranding. Peter Boyle.	.....	Part.
May 17..	Manchester Importer 108,842. May Myrse. 107,967.	13	Manchester, G.B. . .	F & A Steel Steam	2,535	Manchester, G.B.— Manchester, G.B.	White Island, St. Lawrence River	Stranding. A. Haworth.	.....	Part.
June 29..	Minoca. 121,995.	12	Lunenburg, N.S. . .	Schooner. Wood Sail	89.38	Louisburg, N.S.— Baie Verte, Nfld.	Cape Mutton, Nfld.	Stranding. A. Carter.	.....	Total, \$3,300.
July 13..	Minoca. 121,995.	6	Montreal	Schooner. Wood Sail	34	Gaspé, Que.— Port Hawkesbury, N.S.	Portsmouth Point.	Stranding. H. H. Miller.	.....	Part., \$1,000.
Aug.	Manchester Port. . . 113,190.	8½	Manchester, G.B. . .	Schooner. Steel Steam	2,662	Manchester, G.B.— Charlottetown, P.E.I.	River Mersey.	Stranding. C. H. Scott.	.....	Part.
Aug. 29..	Muriel M. Young. 122,007.	6	Lunenburg, N.S. . .	Schooner. Wood Sail	96.67	Lunenburg, N.S.— Cape Broyle, Nfld.	Cape Broyle Harbor,	Collision. Alb. Conrad.	.....	Part., \$250

SESSIONAL PAPER No. 21

Sept. 4..	Monica A. Thomas	Louisburg, N.S.	Schooner. Wood Sail	46	Louisburg, N.S.— Fishing grounds.	Louisburg Harbor.	Stranding..... M. Williams.	Total, \$3,000.
Oct. 9..	Margaret B. Roper	New York.....	Schooner. Wood Sail	357	Rexton, N.B.— New York.	50 miles N.E. of Sambro Island, No. Atlantic.	Sprung a leak..... G. C. Finlay.	Part., \$850.
Oct. 12..	Myrtle..... 103,175.	Halifax, N.S.	Schooner. Wood Sail	10	Halifax, N.S.— Liverpool, N.S.	3 miles of Port of Lunenburg, N.S.	Foundering..... F. E. Bowe.	Total, \$675.
Oct. 25..	Manchester Im- porter. 108,842.	Manchester, G.B.	Steamer. Steel	2,538	Manchester, G.B.— Quebec.	Quebec.	Struck quay wall..... P. Linton.	Light damage.
Nov. 12..	Montauk..... 111,311.	Bristol.....	Steamer. Steel	2,201	Savannah- Bremen.	200 miles of Halifax, N.S.	Damaged in heavy weather. J. W. Houghton.	Part., \$1,300.
Nov. 16..	Morien..... 127,979.	Liverpool.....	Steamer. Steel	489	Louisburg, N.S.— Placentia, Nfld.	Between Louisburg and Placentia.	Missing..... C. M. Burchell.	14 Total.
Dec. 11..	Mayflower..... 103,184.	Digby, N.S.	Schooner. Wood Sail	26	St. Andrews, N.B.— Annapolis, N.S.	Parker's Cove, N.S.	Stranding..... W. A. Anderson.	Total, \$700.
Dec. 17..	Margaret G..... 112,322.	Parrsboro, N.S.	Schooner. Wood Sail	29	Kingsport, N.S.— Havana, Cuba.	Bay of Fundy.....	Collision..... R. H. Burgess.	Part., \$6,000.
Dec. 18..	Minnie Pearl..... 116,503.	St. Johns, Nfld.	Schooner. Wood Sail	56	Twillingate, Nfld.— Halifax, N.S.	Lat. 46° 20' N. Long. 57° 55' W. North Atlantic.	Foundering..... M. Davis.	Total, S., \$4,000 ; C., \$3,000.
Dec. 20..	Minoc..... 129,913.	Halifax, N.S.	Schooner. Steel	48	Halifax, N.S.— Halifax, N.S.	Halifax Harbour....	Collision..... P. Doyle.	Part., \$300.
Feb. 8..	Nina German..... 122,585.	Yarmouth.....	Steamer. Wood Sail	148	Weymouth— San Juan, Porto- Rico.	Lat. 42° 12' Long. 68° 11'.	Stranding..... V. G. Comeau.	Total, \$11,500.
May 14..	Nellie F. Sawyer. 18,779.	Portland, Me.	Schooner. Wood Sail	242	Portland, Me.— Apple River, N.S.	Apple River, N.S.	Stranding..... M. F. Mitchell.	Part., \$3,000.
Oct. 8..	Nina S..... 126,135.	Halifax, N.S.	Schooner. Wood Sail	18	Halifax, N.S.— Terence, Bay, N.S.	Penmont Point, N.S.	Burnt..... J. Slemmwhite.	Total, \$2,000.
Nov. 13..	New Home.....	Barrington, N.S.	Schooner. Wood Sail	31	Barrington, N.S.— Halifax, N.S.	Entrance to Halifax Harbour.	Stranding..... R. Wilson.	Total, S., \$2,000 ; C., \$500.
Dec. 15..	Nidge..... 122,169.	Vancouver, B.C.	Sloop Wood Steam	39	Jordon, R.— Victoria, B.C.	McAulay Point, B.C.	Stranding..... S. Fraser.	Total, \$16,000.
Mar. 12..	Otter..... 107,832.	Victoria, B.C.	Schooner. Wood Steam	232	Victoria, B.C.— Victoria, B.C.	Puget Sound, Wash.	Stranding..... J. C. Shaw.	Light damage.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1912.—Continued.

SEA-GOING WRECKS—Continued.

Date of Casualty.	Name of Ship. Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Reg- ister Ton- nage.	Port sailed from Port bound to	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
1912.										
May 14..	Otis Miller 103,268.	16	Dorchester, N.B..	Schooner. Wood Sail	98....	.....	Minas Channel, N.S.	Stranding L. McGrath.	.....	Part., \$14.
Oct. 25..	Otis Miller 103,268.	16	Dorchester, N.B.	Schooner. Wood Sail	98	Portland, Me- Noal, N.S.	Minas Channel, N.S.	Stranding L. McGrath.	...	Part., \$150.
Nov. 29..	Otokeo..... 130,572.	1½	Lunenburg, N.S.	Schooner. Wood Sail	89·46	Mahone Bay, N.S.— Georgetown, P.E.I.	Craignore, N.S.....	Stranding C. N. Ernest.	...	Part., \$1,000.
May 3..	Princess Charlotte. 126,236.	3	Victoria, B.C..	Schooner. Steel Steam	1999	Vancouver, B.C.— Seattle, Wash.	Vancouver Narrows.	Stranding T. O. Griffin.	...	No. loos.
Mar. 25.	Prince Albert..... 99,584.	20	Prince Rupert, B.C.	Schooner. Steel Steam	586·60	Seattle, Wash.— Queen Charlotte Island, B.C.	Victoria Harbour, B.C.	Stranding D. Mackenzie.	...	
April 29..	Parana..... 112,113.	9	Lunenburg, N.S..	Schooner. Wood Sail	99	Gold River— New York.	.....	Stranding Capt. Tupper.	...	
May 19..	Prince John.....	....	Prince Rupert, B.C. F. & A....	Steel Steam	540	Prince Rupert, B.C.— Maden Harbour.	Masset Bar, B.C..	Stranding ..... .....	.....
June 11..	Percy C..... 126,037	3	Liverpool, N.S....	Schooner.. Wood Sail	96-77	Liverpool, N.S.— New York.	Off Little Hope, N.S.	Sprung a leak. J. Evans.	...	Partial, \$500.
July 22..	Pride of the Port..	14	Southport, Me....	Schooner.. Wood Sail	30	Boothbay, U.S.A.— Woods Harbour.	Seal Island Cove, N.S.	Stranding G. H. Belliveau.	.....	Partial, S. \$2,000. C. \$500.
Sept. 12..	Prince John..... 129,742	2	Prince Rupert, B.C.	Schooner.. Steel Steam	539-31	Prince Rupert, B.C.— Masset Bar, B.C.	Masset Bar... ..	Stranding C. W. Wearnouth.	.....	Light.
Oct. 3..	Peerless..... 85,371	30	Yarmouth, N.S...	Schooner.. Wood Sail	278	St. John, N.B.— New York.	Lubec, Maine.....	Sprung a leak H. Zinck.	.....	Partial, \$600.

SESSIONAL PAPER No. 21

Oct.	8..	Princess Mary 126,950	Victoria, B.C.....	F. & A.... Steel	1011	Vancouver, B.C.- Vancouver, B.C.	Evans, Coleman and Evans Docks.	Collision.....	.....
Nov.	19..	Patrol B	1	Sloop..... Wood		Halifax, N.S.- Barrington, N.S.	Barrington Pass, N.S.	Collision.....	.....	None.
Dec.	6..	Percy C	3	Steam Schooner.. Wood	99	New York- Halifax, N.S.	Bay of Fundy.....	Loss of sails. J. Evans.	.....	Part., \$200.
Feb.	7..	Queen City.....	19	Sail Schooner.. Wood	244	Victoria, B.C.- Esquimalt, B.C.	Naval Yard Wharf, Esquimalt, B.C.	Stranding.....	.....
Feb.	23..	Rob Roy	12	Steam Schooner.. Wood	80	Gloucester- Fishing Grounds.	S. E. of George's Banks.	Sprung a leak R. Keef.	.....
Mar.	27..	Romsdal.....	40	Sail Schooner.. Iron	873	Bergen, Norway- Louisburg, N.S.	100 miles S. E. of Louisburg, N.S.	Plates damaged by ice S. A. Hoie.	.....	Part., \$1,000.
May	24..	Raum.....		Steam Schooner.. Steel	775	North Sydney, N.S.- New York.	Mersey River, N.S.	Stranding....	.....	No loss.
June	19..	Restless	29	Steam Schooner.. Wood	25	Sandy Cove, N.S. Digby, N.S.	Annapolis Basin, N.S.	Dismasted .....	.....	Part. \$125.
Nov.	6..	Royal George.....	5	Sail Schooner.. Steel	5685-11	Avonmouth- Montreal.	Island of Orleans, P.Q.	Stranding .....	.....	Part.
Nov.	30 .	River Meander....	6	F. & A.... Steel	2501	Newcastle-Barcelona	Lat. 39° 59' N..... Long. 63° 40' W. North Atlantic.	Foundering.....	.....	Total.
Dec.	3..	Roma	13	Steam Schooner.. Wood	99	Chatham, N.B.- New York	Boston Bay.....	Loss of part of deck cargo. David Riteey.	.....	Part.
Jan.	12..	St. George.....	7	Sail Composite	340-07	Vancouver, B.C.- Vancouver, B.C.	Burrard Inlet, B.C.	Collision.....	.....	Part., \$2,000.
Jan.	12..	Strathallbyn.....	2	Steam Schooner.. Steel	2804	Barry Dr. Sydney.	Between Robinson Pt. and Pelly Pt.	Collision.....	.....	Heavy loss.
Jan.	19..	Storm King.....	6	Steam Tug..... Wood	66-99	Ladysmith, B.C.- Port Neville, B.C.	Joyce Point, B.C.	Stern damaged ..	.....
Feb.	1..	Sallust	14	Steam Schooner.. Steel	2308	Liverpool, G.B. Manchester, G.B.	Lat. 35° 9' N..... Long. 66° 27' W. North Atlantic.	Steam pipe damaged A. Alien.	.....	Part., \$100.
Feb.	5..	Silver Leaf.....	8	Steam Schooner.. Wood	283	Church Point, N.S.- Porto Rico.	Lat. 57° 15' Long. 64° 20' Gulf Stream.	Sprung a leak and lost bowsprit. S. Galter.	21	

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1912.—*Continued.*

SEA-GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship. Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Register- ing Ton- nage.	Port sailed from Port bound to.	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
Mar. 5.	Sivah.....	36	(Norwegian)	Bque..... Iron Sail	1040	Aberdeen, G.B.— Buenos-Ayres.	Sissiboo River, N.S.	Stranding..... C. J. Olsen.	.....	Light damage.
Mar. 21.	Storm King..... 121,165.	6	Vancouver, B.C.	Tug..... Wood Steam	66·99	Vancouver, B.C.— Port Moody, B.C.	Burrard Inlet, B.C.	Collision..... J. H. McNamara.	.....	Part., \$1,800.
Mar. 30.	St. Maurice..... 103,723.	15	Parrsboro, N.S.	Schooner. Wood Sail	272	Gulf Port— Havana.	Havana, Cuba	Collision..... L. H. Sabean.	.....	Part., \$1,800.
April 21	Sophia H.....	.....	Rotterdam.....	Steamer.. Iron Steam	1864	..... Louisburg, N.S.	Louisburg Harbour..	Propeller broken.... C. Hopeks.	.....	.....
April 28.	St. Roch.....	.....	France	Schooner.. Wood Sail	46	St. Pierre Miquelon— Sydney, N.S.	Scatarie, N.S.....	Stranding..... Capt. Outin.	.....	Total.
May 5.	Strathlorne..... 126,438.	3	Halifax, N.S.	..... Wood Steam	81	Halifax, N.S.— Cheticamp, N.S.	Margaree Harbour, N.S.	Stranding..... Wm. Dickson.	.....	Part.
June 1	St. Bernard..... 107,570.	11	Parrsboro, N.S.	Schooner.. Wood Sail	123	Port Greville, N.S.— Vineyard Haven, U.S.A.	Port Greville, N.S.	Stranding..... Wm. McLeod.	.....	Part., \$200.
June 28.	Sea Wolf..... 126,075.	4	Vancouver, B.C.	..... Wood Steam	19·79	Vancouver, B.C.— Port Moody, B.C.	Port Moody... ..	Burnt..... A. Brown.	.....	Total, \$5,000.
Sept. 9.	Sceptre..... 92,627.	25	Lunenburg, N.S.	Bgte..... Wood Sail	99·91	Lunenburg, N.S.— Porto Rico.	Lat. 34° 50' N..... Long. 63° 05' W. No. Atlantic.	Collision..... Henry Burke.	.....	Total, S. \$10,000. C. \$10,000.
Oct. 16.	Secret .....	...	Magdalen Islands.	Schooner.. Wood Sail	76	Magdalen Islands Halifax, N.S.	Amherst Harbour, Magdalen Islands.	Stranding..... C. Chiasson.	.....	Total.
Nov. 7.	Songdal .....	...	(Norwegian).....	.....	...	Campbellton— Rosario.	Restigouche River..	Stranding.....	.....	Light damage.

SESSIONAL PAPER No. 21

Nov. 8	Ste. Celestine 126,846.	Quebec	52-25	Marsonin, P. Q. Quebec.	Portneuf Banks, P. Q.	Wrecked.....	2	Total, \$620.
Nov. 10	St. Olaf 116,321.	Parrsboro, N.S.	277	Baltimore, U.S.A.	Off Havana, Cuba...	Loss of sails W. S. Carter.		Part., \$1,000.
Nov. 20	Strathline 129,458.	Glasgow, G.B.	2790	Portland, Oregon Japan.	North Pacific.....	Deck cargo swept away. Wm Durdin.		Part.
Nov. 28	Shamrock 107,762.	Charlottetown, P.E.I.	27	Charlottetown, P.E.I. Sydney, N.S.	Bear Island, Strait of Canso.	Collision..... M. Pearson.		Part.
Dec. 8	Senator.....	Vancouver, B.C.	21-42		False Creek, B.C....	Foundering H. Grauer.		Part., \$1,000.
Dec. 2	Sam Slick 107,301.	Windsor, N.S.	90	Digby, N.S. Parrsboro, N.S.	Bay of Fundy	Part of rigging carried away.		Part., \$100.
Dec. 12	St. Olaf 116,326.	Parrsboro, N.S.	277	West Indies- Baltimore, U.S.A.	Hog Island, U.L.A.	Stranding		Part., \$1,200.
Dec. 17	Stella Maud 100,976.	St. John, N.B.	99	Parrsboro, N.S. Windsor, N.S.	Avon River, Wind- sor, N.S.	Stranding		Total, \$950.
Dec. 19	St. Anthony 107,562	Parrsboro, N.S.	99	Eatonville, N.S. Boston, Mass.	Eatonville Harbour..	Stranding		Part, \$400.
Dec. 30	S. P. Willard.....	Essex, U.S.A.	87	Gloucester, U.S.A. Gloucester.	Gabarus, N.S.	Stranding		Total, \$5,000.
Jan. 17	Trebia..... 115,272	St. John, N.B.	2,343	Newport-Bremen...	Cape Lookout Shoal, Virginia.	Stranding		
Oct. 11	Titania.....	Gloucester, U.S.A.	77-43	Gloucester, U.S.A. Louisburg, N.S.	Louisburg, N.S.	Stranding		Part.
Nov. 13	Thurland Castle.	Liverpool, G.B.	2,484	Newport-Ghent....	Atlantic Ocean.....	Main feed pipe frac- tured. J. A. Kelly.		Part, \$85.
Nov. 19	Tabaristan... 124,714	Swansea, S.W.	1,836	Newport - Liverpool, G.B.	Lat. 41 N..... Long. 56 W. Atlantic Ocean.	Cargo damaged by fire. J. B. Moore.		Part.
Dec. 4	Tanagra... 110,601	St. John, N.B.	2,159	Philadelphia- Havana, Cuba.	Havana Harbour....	Stranding		Part.
Dec. 15	Tasmania... 111,636	Lumenburg, N.S.	99-48	St. Johns, Nfld.- Halifax, N.S.	Cape Ballard, Nfld.	Foundering		Total. S: \$4,000. C: \$7,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters, and to Canadian vessels in other waters, from January 1 to December 1, 1912—*Continued.*

SEA-GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship. Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Register Ton- nage.	Port sailed from Port bound to	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
1912.										
Jan. 16..	Usher..... 114,053	11	Yarmouth, N.S....	F. & A... Steel Steam	2,350	Port Arthur, Texas— Hamburg.	Lat. 37° 7' N. Long. 66° 35' W. North Atlantic.	Damaged by heavy sea. G. K. Perry.	.....	Light damage.
April 16..	Uranus..... 116,510	8	Lunenburg, N.S. . .	Schooner.. Wood Sail	90·08	Ingram Docks - —	35 miles off Sable Island.	Collision..... S. Cohen.	.....	Total, \$6,300.
April 29..	Ultonia..... 109,478	14	Liverpool, G.B....	Schooner.. Steel Steam	6,593	Southampton--Montreal.	Lat. 42° 26' N. Long. 42° 45' W. Atlantic Ocean.	Propeller and tail shaft damaged. Wm. Crothers.	.....	Part.
May 10..	Urbye.....	.....	(Norwegian).....	Barque... Steel Sail	967	Genoa - Bridgewater, N.S.	Port Beckerton, N.S.	Stranding..... R. Bull.	.....	Total, \$50,000.
Jan. 9..	Virginia ... 112,097	10½	Lunenburg, N.S. . .	Schooner.. Wood Sail	134	Halifax, N.S.-La Have, N.S.	Rosehead, N.S. . .	Stranding..... J. L. Publicover.	.....	Total, \$4,000.
April 21..	Village Belle..... 116,556	....	Maitland, N.S....	Schooner.. Wood Sail	99	Montevideo-Halifax, N.S.	Uruguay.....	Stranding..... J. A. Hiley.	.....	.....
June 11..	Valdare... 94,743	7	Digby, N.S.....	Schooner.. Wood Sail	95·14	Bear River, N.S.-Boston, Mass.	100 miles east of Cape Ann. Atlantic Ocean.	Foremast carried away.	.....	.....
July 22..	Venture..... 96,781	23	Halifax, N.S.	Schooner.. Wood Sail	43	Pugwash, N.S..... Pugwash, N.S.	Northumberland Strait.	Stranding..... C. Kennedy.	.....	Part. S: \$600. C: \$30.
Sept. 29..	Virginian ... 121,219	8	Glasgow.....	Schooner.. Steel Steam	6,826	Liverpool, G.B.-Montreal.	Quebec.....	Collision..... J. T. Gambell.	.....	Light damage.
Oct. 13..	Vadso..... 124,077	3½	Victoria, B.C.....	Steamer... Steam	698	.....	Reef Point, B.C. . .	Stranding.....	.....	Part.
Nov. 12..	Visborg.....	.....	(Norwegian).....	Steamer... Steam	.....	Seven Islands-Glasgow.	Anticosti.....	Stranding.....	.....	Light damage.

Nov. 29..	Village Belle..... 116,556	5	Halifax, N.S.....	Schooner.. Wood Sail	99	Halifax, N.S.-Clyde River, N.S.	Atlantic ocean.	Main boom broken and mainsail split- ed. J. Collier.	.....	Part., \$100.
May 9..	Warren W..... 103,594	15	Charlotte town, P.E.I.	Schooner.. Wood Sail	79	Glace Bay, N.S. Chatham, N.B.	Big Bras d'Or, N.S..	Stranding..... W. F. McInnis.	.....	Total, \$1,200.
May 14..	William Hackett.. 111,482	12	Quebec	Steamer.. Wood Steam	85	Quebec Halifax, N.S.	2 miles east of Grand River light-house, N.B.	Foundering.....	.....	Total, \$10,000.
Aug. 12..	Wandrian	29	Bridgtown, Bbdoes	Schooner.. Wood Sail	311	..... St. John, N.B.	St. John, N.B.	Stranding..... J. W. Shearwater.	.....	Part., \$1,000.
Sept. 13..	Wakanii	13	Plymouth	Schooner.. Steel Steam	3751	Cardiff Melbourne..	Montreal.	Damaged by fire. . G. F. Mead.	.....	Part., \$12,000.
Oct. . . .	Walter Miller.... 96,944	22	St. John, N.B. . .	Schooner.. Wood Sail	118	St. Martin, N.B.- Boston, Mass.	Cape Porpoise, Me..	Stranding .....	.....	Part.
Nov. 20..	Wilfrid L. Snow.. 121,812	4	Digby, N.S.	Schooner.. Wood Sail	50	Digby, N.S.-Fishing Grounds.	Bay of Fundy.....	Loss of main mast... P. V. Ross.	.....	Part., \$100.
Dec. 19..	William Gertrude 129,967	4	Parrsboro, N.S....	Schooner.. Wood Sail	277	St. Stephens, N.B.- St. John, N.B.	Courtney Bay, N.B..	Stranding..... W. H. Smith.	.....	Part., \$1,271.
Feb. 6..	Yolande	5	Parrsboro, N.S....	Schooner.. Wood Sail	77	St. John, N.B.-Bar- badoes.	Lat. 37° 57' S..... Long. 1° 25' E. Atlantic ocean.	Loss of sails boat and rigging. S. E. Hirtle.	.....	Part., \$500.
Sept. 18..	Zapotec	20	Kingston	Schooner.. Wood Steam	779	Quebec-Cornwall, Ont.	Bersimis, P.Q.	Stranding .....	.....	Part. S., \$3,000 ; C., \$1,000.

INLAND WATERS WRECKS.

June 18..	Adirandled.. .. 130,922	.....	Montreal	Barque... Wood Steam	361	Erie, Pa. Montreal.	Lake Ontario.. . .	Foundering .....	.....	Total loss, \$7,500.
Sept. 4..	America..... 10,062	.....	Kingston, Ont.	Paddle,.. Compos. Steam	266	Kingston, Ont. Cape Vincent, U.S.A.	Lake Ontario.....	Stranding..... R. H. Carnegie.	.....	No loss.
Sept. 7..	Augustus..... 96,919	19	Kingston, Ont.	Barge.... Wood	802	Ashtabula- Montreal.	Saluon Point, Lake Ontario.	Stranding..... P. Lalonde.	.....	"
Oct. 22..	Alexandria. 85,768	29	Picton, Ont	Sloop... Wood Steam	507	Kingston, Ont.- Montreal.	Pateau Lake, Ont....	Stranding .....	.....	"
Dec 5..	Alfred H. Clarke..	.....	.....	.....	.....	.....	Bell's Point, Ont....	Stranding .....	.....	"
								D. McCormick....		

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 1, 1912—Continued.

INLAND WATERS WRECKS.—Continued.

Date of Casualty.	Name of Ship. Off. No.	Age of ship. Yrs.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Register Tonnage.	Port sailed from Port bound to	Place where Casualty happened.	Particulars of Casualty.	Lives Lost.	Loss.
1912.										
June 26..	Bothnia..... 100,600	17	Montreal.....	Steamer.. Wood Steam	478	Meaford, Ont.- Welland, Ont.	St. Clair Flats	Collision.....	1	Total, \$17,000.
July 3..	Byron Whitaker...		(Foreign).....	Wood Steam	1,388	Chicago, Ill. Prescott, Ont.-	Lake Ontario.....	Stranding ....	.....	No loss.
Sept. 7..	Bartlett..... 124,268	4	Montreal.....	Tug..... Steel	41	.....	Salmon Point, Lake Ontario.	Stranding..... L. Mullan.	.....	"
Jan. 11..	Colomb..... 126,926	1	Quebec.....	Steamer.. Steel	338	Levis.- Quebec.	Quebec wharf.....	Collision.. .. Capt. Chamberland	.....	Light damage.
Aug. 20..	Chieftain III.....	6	Kingston, Ont.	Wood Steam	147	Kingston, Ont.- Kingston, Ont.	St. Antoine's Light, St. Lawrence River.	Collision..... C. E. Philie.	...	Total, \$20,000.
Sept. 16..	Caspian..... 112,142		Kingston, Ont.....	Paddle... Wood & Iron	40	Kingston, Ont.- Charlotte, N.Y.	Salt Point, 134 miles of Kingston.	Stranding..... J. Jarrell.	.....	No loss.
Nov. 1..	Cecilia L..... 130,420	2	Montreal.....	Steamer.. Wood	115 37	Montreal.- Valleyfield.	Isle Perrot	Foundering.....	12	Total, \$11,142.
Nov. 21..	Chateauguay..... 103,099	19	Montreal.....	Steamer.. Steam	119	.....	Beauharnois Wharf.	Foundering.....	.....	Part.
May 2..	Empress of Midland 125,428	5	Newcastle, G.B....	Schooner. Steel	1,630	Midland, Ont.- Fort William, Ont.	Cabot Head, Georg- ian Bay.	Stranding..... J. L. Baxter.	.....	Part.
June	Ella Ross.....	32	Deseronto	Steamer.. Steel	125	.....	Parry Sound Wharf.	Burnt ..	.....	Total, \$6,009.
July 3..	Emma.....		Toronto, Ont.....	Steamer.. Wood Steam	54	Parry Sound, Ont.- Owen Sound, Ont.	$\frac{1}{2}$ mile of Sisters Rock beacon, Georgian Bay.	Burnt..... John Dube.	.....	Total

SESSIONAL PAPER No. 21

Sept.	1.	Eastwood.....	30	Montreal.....	Barge..... Wood Steam	1934-70	Erie, Pa.- Chicoutimi, P.Q.	Chicoutimi Wharf...	Collision.....	.....	Light damage.
Dec.	5.	Easton..... 136,568	16	Duluth, Minn.....	Steel Steam	313	Duluth, Minn.-Port Arthur.	Iroquois Reef, Lake Superior.	Stranding F. J. Soleanson.	.....	Light damage.
July	7.	Florida..... 107,894	12	Montreal.....	Steamer... Wood	12823	Sorel Montreal..	Montreal Harbour...	Burnt..... Jos. Gouin.	.....	Total:— Ship, \$8,000. Cargo, \$10,000. Part.
July	13.	Geronia... 111,964	1	Picton, Ont.....	Steamer... Steel	14689	Toronto, Ont. Quebec.	Lachine Canal... ..	Stranding... M. Hiffenson.	.....	Total.
Aug.	31.	Huron .....	.....	Montreal.....	Barge Wood	475	Kingston, Ont.- Montreal.	Near Morrisburg, Ont.	Collision.....	.....	Total.
Oct.	17.	H. B.	22	Prescott, Ont.....	Tow..... Barge Sail	541	Oswego-Montreal...	Lake Ontario.....	Stranding... A. Desrochers.	4	Total:— Ship, \$5,000. Cargo, \$7,042. Part. \$6,000.
Nov.	18.	Harvey D. Goulder.	.....	Duluth, Minn.....	Steel Steam	5,219	Duluth, Minn.- Buffalo.	Sault Ste. Marie Canal.	Collision..... D. Davidson.	.....	Part., \$35.
Nov.	28.	Henry Aleck.....	2	.....	Skiff..... Wood	.....	Point Ann, Ont.- Belleville, Ont.	Point Ann, Bay of Quinte.	Foundering... D. Sweeney.	2	Part., \$6,000.
Nov.	29.	Hustler	3	Sarnia, Ont.....	Gas Derrick... Wood	230	Point Edward, Ont.- Windsor, Ont.	St. Clair River....	Collision..... F. Hendrick.	.....	Total, \$17,000.
May	18.	Iona..... 94,922	20	Picton, Ont.....	Steamer... Wood	157	Sodus Point, N. Y. Montreal.	Lake Ontario.....	Burnt..... J. B. Fmond.	.....	Total, \$30,000.
Oct.	10.	Imperial..	10	Fort William, Ont.	Scow..... Wood	.....	Nepigon-Nepigon.	Nepigon Bay	Foundering... H. Wilson.	.....	Total, \$1,500.
July	26.	J. L. Beckwith... 111,802	40	Sault Ste. Marie, Ont.	Steamer... Wood Steam	33	Michipicoten, O. Sault Ste. Marie.	Sandy Island, Lake Superior.	Broken up by storm.	.....	Light damage.
Oct.	23.	J. Tolmie.....	.....	Kingston, Ont.....	Barge..... Wood	227	Amherstburg- Rondeau, Ont.	Rondeau Harbour...	Sprung a leak..... J. S. McQueen.	.....	Part., \$3,000.
Nov.	1.	Juno.....	25	Toronto, Ont.....	Barge..... Wood	195	Belleville, Ont. Toronto, Ont.	Cobourg Harbour, Lake Ontario.	Foundering... B. McIntyre.	.....	No loss.
Nov.	13.	J. L. Weeks	9	Cleveland, O.....	Screw..... Steel	3,451	Superior, Me. Cleveland, O.	Lake Superior, (American waters)	Stranding... A. W. Holmes.	.....	Part., \$4,500.
Oct.	12.	Kathleen..... 90,574	26	Toronto, Ont.....	Steam Wood Steam	71,63	Toronto, Ont.- Toronto, Ont.	Arnots Shipyard, Toronto.	Damaged by fire...	.....	Part., \$1,500.

STATEMENT OF wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1912. —Continued.

INLAND WATERS WRECKS.—Continued.

Date of Casualty.	Name of Ship. Off. No.	Age.	Registered Port.	How rigged, Iron or Wood, Steam or Sail.	Reg- ister Ton- nage.	Port sailed from Port bound to	Place where Casualty happened.	Nature of Casualty and Master of Vessel.	Lives Lost.	Remarks.
1912.										
Oct. 26.	Keystorm..... 129,749	3	Newcastle.....	Schooner Steel Steam	1,037.14	Charlotte, N.Y. Montreal.	Scow Island Shoal, (American waters).	Foundering..... L. Daignault.	.....	Total, \$135,000.
Nov. 7.	Keyport..... 125,459	4	Newcastle.....	Steel Steam	1,297	Montreal-Montreal.	Lachine Canal ...	Collision.....	.....	No loss.
Aug. 17.	Leafield..... 97,990	21	Newcastle.....	Schooner. Steel Steam	922	Fort William- Midland, Ont.	Georgian Bay.	Stranding..... A. McIntyre.	.....	Part., \$15,000.
Oct. 7.	Little Queen... 130,327	1	Kingston, Ont.	Yacht... Oak Gasoline	10.49	Kingston, Ont.....	Rideau Canal, Ont..	Burnt .....	.....	Part., \$1,500.
May 27.	Mildred..... 96,896	.....	.....	Wood Steam	13	Buckingham-High Falls.	Rivière du Lièvre...	Went over dam.... G. N. Bothwell.	....	Total, \$6,000.
Oct. 10.	Mapleton ... 123,986	4	Sunderland.	Steamer Steel Steam	1,139	Port Arthur, Ont.- High Falls.	Opposite Longueuil, P. Q.	Stranding .....	.....	Light damage.
Oct. 12.	Marengo	39	Erie, Pa.....	Barge Wood Tow	6,218	Erie, Pa. Port Col- borne.	Morgan's Point, Ont.	Stranding .....	.....	Total, \$6,000.
Oct. 14.	Mount Caskell....	1	Winnipeg, Man....	Wood Steam	.....	Winnipeg, Man.- Port Colborne.	Assiniboia River, Man.	Damaged by fire....	....	Part., \$17,000.
Nov. 13.	Mayflower..... 116,861	9	Ottawa, Ont.....	Steamer	38	Barry's Bay, Ont.- Combermere, Ont.	8 miles of Barry's Bay.	Foundering..... A. Parcher.	9	Total.
Sept. 15.	Oliver Mowatt. ... 92,384	.....	Bowmanville.....	Steam Schooner Wood Sail	198	Kingston, Ont. Oswego.	Yorkshire Island, Lake Ontario.	Stranding .....	.....	Part.
Nov. 1.	P. B. Locke	40	Toronto, Ont.....	Barge Wood Tow	305	Belleville, Ont.- Toronto, Ont.	3 miles S.E. of Port Hope, Lake Ont- ario.	Foundering... D. M. Vicker.	....	Total— Ship, \$2,000. Cargo, \$500.

SESSIONAL PAPER No. 21

Jan. 11.	Queen.	5	Quebec.	Steamer Wood Steam	249-25	Quebec-Levis.	Quebec Wharf.	Collision	Light damage.
July 24.	Rapids Prince. 92,335	2	Montreal.	Steel Steam	955-11	Prescott, Ont. Mon- treal.	Lachine Rapids.	Stranding G. Batten.	Light damage.
Sept. 22.	Rapids Prince. 130,418	2	Montreal.	Steel Steam	955-11	Montreal Prescott, Ont.	Sturgeon's Reef, St. Lawrence River.	Stranding G. Batten.	Light damage.
Oct. 25.	Rock Ferry. 130,419	30	Montreal.	Steel Steam	715-56	Montreal Fair Haven, N.Y.	Charity Shoal, Lake Ontario.	Stranding A. Robineau.	
Nov. 11.	Rosedale. 95,265	24	Hamilton, Ont.	Wood Steam	977	Kingston, Ont.-Fort William, Ont.	Detour Point, Lake Huron.	Stranding G. Molley.	Part.
Oct. 4.	Sarnia City			Iron Steam Tug		Sarnia, Ont.-Toledo, Ohio.		Stranding F. B. Ellis.	Part., \$250.
Nov. 2.	Sir Hector 122,277	5	Winnipeg, Man.	Wood Steam	22-42	Selkirk-Dauphin River.	Lake Winnipeg.	Stranding J. A. Howell.	Total, \$16,000.
Nov. 11.	S. & Y.			Wood Steam			6 miles below Flat Rapids.	Foundering.	Part.
Dec. 11.	Sowards 126,221	25	Kingston, Ont.	Steamer Wood Steam	119		Kingston Harbour.	Damaged by fire M. Straw.	Part., \$1,000.
Sept. 29.	Tobo.		Winnipeg, Man.	Barge Wood		Winnipeg, Man. Hyland Park.	Red River, Man.	Foundering.	Total, \$500.
Oct. 11.	Windsor 125,986	19	Montreal.	Schooner Wood Steam	276-02	Montreal Montreal.	Lachine Canal.	Stranding J. Doyle.	Light damage.
Nov. 23.	William Edwards 80,726	33	Huron, O.	Wood Steam	973	Conneault Lorrain.	Lachine Canal.	Stranding C. Ahlstrom.	Part.

APPENDIX No. 10.

NAVIGATION SCHOOLS.

During the past winter season, navigation schools were in operation for shorter or longer periods at Halifax, North Sydney and Yarmouth, N.S., Quebec, P.Q., Collingwood, Ont., and at Vancouver, B.C.

At Halifax, owing to the illness of Captain Lugar, only five lectures were delivered.

At North Sydney, thirty lectures were delivered. The total attendance at these lectures was 242, an average attendance of 8.2 persons at each lecture.

At Yarmouth thirty lectures were delivered. The total attendance at these lectures was 161, an average attendance of 5.11 persons at each lecture.

At Quebec, forty-three lectures were delivered or sessions held. The total attendance was 753, an average attendance of 17.22 persons at each lecture.

At Collingwood, thirty-two lectures were delivered. The total attendance at these lectures was 361, an average attendance of 11.9 persons at each lecture.

At Vancouver, fifteen lectures were delivered. The total attendance at these lectures was 178, an average attendance of 11.13 at each lecture.

APPENDIX No. 11.

MASTERS AND MATES.

EXAMINATIONS.

During the past year some changes have been made in the system carrying on examinations for masters and mates certificates.

Owing to the extensiveness of the area to be covered by examiners, and the varied condition of the country, three divisions have been made of the field, and a supervising examiner appointed in each division, viz.: The eastern division with Captain W. R. Lugar, Halifax, N.S., as supervising examiner; the western division, with Captain Charles Eddie, Vancouver, B.C., as supervising examiner; and the inland waters division with Captain Henry W. King, Toronto, Ontario, as supervising examiner.

Examinations were reported as follows during the twelve months ended March 31, 1913:—

Eastern Division.

At Halifax, N.S., Captain Lugar, examiner, 29 candidates were examined: 3 for mate and 2 for second mate, sea-going; 6 for master and 14 for mate, coasting; and 1 for master and 3 for mate, minor waters. Thirteen candidates failed: 3 for mate and 1 for second mate, sea-going; 2 for master and 4 for mate, coasting; and 1 for master and 2 for mate, minor waters. Five persons underwent the sight tests.

At Yarmouth, N.S., Captain Murphy, examiner, 65 candidates were examined: 19 for master, 9 for mate and 5 for second mate, sea-going; 15 for master and 10 for mate, coasting; and 5 for master and 2 for mate, minor waters. Ten candidates failed: 6 for master and 2 for mate, sea-going; and 1 for master and 1 for mate, coasting.

At North Sydney, N.S., Captain Sutherland, examiner, 11 candidates were examined: 1 for master, sea-going; 5 for master and 4 for mate, coasting; and 1 for master, minor waters. Four candidates failed: 2 for master and 2 for mate, minor waters. One person underwent the sight tests.

At Charlottetown, P.E.I., Captain Cameron, examiner, 3 candidates were examined: 1 for mate, coasting; and 1 for master and 1 for mate, minor waters. One person underwent the sight tests.

At Montreal, P.Q., Captain Riley, examiner, 48 candidates were examined: 5 for master and 8 for mate, coasting; 9 for master and 11 for mate, inland waters; 8 for master, minor waters; and 7 for temporary certificates. One candidate failed for master, inland waters. One person underwent the sight tests.

Western Division.

At Vancouver, B.C., Captain Eddie, examiner, 84 candidates were examined: 1 for mate and 8 for second mate, sea-going; 36 for master and 33 for mate, coasting; 2 for master, inland waters; 3 for mate, minor waters; and 1 for a temporary certificate. Eighteen candidates failed; 8 for master and 9 for mate, coasting; and 1 for mate, minor waters. Three persons underwent the sight tests.

At Victoria, B.C., Captain Gaudin, examiner, 16 candidates were examined; 1 for master, minor waters. Five persons underwent the sight tests.

4 GEORGE V., A. 1914

At Nelson, B.C., Lieut. Hallett, examiner, 8 candidates were examined: 3 for master and 5 for mate, minor waters.

At Edmonton, Alta., Captain Grant, examiner, 1 candidate was examined for mate, minor waters.

Inland Waters Division.

At Toronto, Ontario, Captain King, examiner, 51 candidates were examined: 23 for master and 22 for mate, inland waters; and 5 for master and 1 for mate, minor waters. Fifteen candidates failed, 5 for master and 8 for mate, inland waters; and 2 for master, minor waters. Five persons underwent the sight tests.

At Toronto, Ontario, Captain Moller, examiner, 8 candidates were examined: 2 for master and 3 for mate, inland waters; 2 for master, minor waters; and 1 for a temporary certificate.

At Collingwood, Ontario, Captain Coles, examiner, 53 candidates were examined: 20 for master and 12 for mate, inland waters; 7 for master and 7 for mate, minor waters; and 7 for temporary certificates, 16 candidates failed, 6 for master and 3 for mate, inland waters; and 3 for master and 4 for mate, minor waters.

At West Selkirk, Man., Captain Thordarson, examiner, 12 candidates were examined: 1 for master and 1 for mate, coasting; 3 for master and 2 for mate, inland waters; and 5 for master, minor waters.

At Kenora, Ontario, Captain Phillips, examiner, 8 candidates were examined for temporary certificates.

At Ottawa, Ontario, Captain Lindsay, examiner, 23 candidates were examined: 3 for mate, coasting; 1 for master and 1 for mate, inland waters; 5 for master, minor waters; and 13 for temporary certificates. Two candidates failed, 1 for master, inland waters; and 1 for master, minor waters.

CERTIFICATES ISSUED.

During the year the following numbers and grades of certificates have been issued to masters and mates, 14 masters, 9 mates and 14 second mates, sea-going certificates of competency; 63 masters and 64 mates, coasting certificates of competency; 47 masters and 40 mates, inland waters certificates of competency; 36 masters and 16 mates, minor waters certificates of competency; and 37 masters, temporary certificates. A complete list of masters and mates certificates issued during the year follows.

RECEIPTS AND EXPENDITURE.

The total amount collected in the way of examination fees for certificates during the twelve months ended March 31, 1913, was \$3,639.06 and the amount expended on account of this service was \$9,992.66, an excess of expenditure over receipts of \$6,353.60.

SESSIONAL PAPER No. 21

The following statement shows the total receipts and expenditures on account of masters and mates during the last ten years:—

			Expenditure.	Receipts.
			\$ cts.	\$ cts.
For the fiscal year ended June 30, 1904.....			7,761 17	4,795 00
" " 30, 1905.....			5,884 74	4,643 85
" " 30, 1906.....			7,068 15	5,526 00
" ended March 31, 1907 (nine months).....			5,934 16	2,294 50
" " 31, 1908.....			11,508 31	4,306 05
" " 31, 1909.....			8,244 56	4,192 50
" " 31, 1910.....			6,662 52	4,314 50
" " 31, 1911.....			5,801 62	4,446 61
" " 31, 1912.....			7,226 54	3,970 00
" " 31, 1913.....			9,992 66	3,639 06
Expenditure.....			76,084 43	42,128 07
Receipts.....			42,128 07	
Excess of expenditure over receipts.....			33,956 36	

No. 1.—LIST of sea-going certificates of competency issued to masters, mates and second mates, during the twelve months ended March 31, 1913.

No. of certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1912					\$ cts.
3948	April 2	Andrew Brown.....	Mate.....	Cheverie, N.S.	Yarmouth, N.S.	8 00
3949	" 15	John Angus Macdonald.	Master..	Forbes Court Sydney, N.S.	North Sydney, N.S.	15 00
3950	" 15	Engène Fortin.....	2nd Mate.....	L'Islet, P.Q.....	Ottawa, Ont....	8 00
3951	" 15	Patrick McManus.....	Mate.....	Vancouver, B.C.....	Vancouver, B.C.	8 00
3952	" 22	Edward Russell Heather	2nd Mate.....	Pugwash, N.S.....	Halifax, N.S....	8 00
3953	May 13	Alphonsus George Gleeson.	".....	New York, U.S.A....	Yarmouth, N.S.	8 00
3954	" 14	Elroy Peck.....	Master.	Bear River, N.S.....	" ..	15 00
3955	" 14	Foster Bullerwell.....	2nd Mate.....	Parrsboro, N.S.	" ..	8 00
3956	June 19	Robert Hunter McNair..	Mate.....	Elmslie Kilmarnock, Scotland.	Victoria, B.C....	8 00
3957	" 19	Arthur Smith Codling...	2nd Mate.....	South Shields, England	Vancouver, B.C.	8 00
3958	" 19	Christian A. P. Jensen..	Mate.....	Brooklyn, U.S.A.....	Yarmouth, N.S.	8 00
3959	July 9	William McWhinnie....	2nd Mate.....	New York, U.S.A....	" ..	8 00
3960	" 9	James S. Le Cain.....	Mate.....	Cheverie, N.S.....	" ..	8 00
3961	" 18	Dwight W. McLellan...	2nd Mate.....	Five Islands, N.S.....	" ..	8 00
3962	" 18	Alfred Graham.....	Master.	New Glasgow, N.S....	" ..	15 00
3963	" 25	William Ewart Earle. .	2nd Mate.....	Collingwood, Ont.	Vancouver, B.C.	8 00
3964	August 7	Grey B. Leonard.....	Mate	St. John West, N.B...	Yarmouth, N.S.	8 00
3965	" 7	William C. Brodie.....	Master.	New York, U.S.A....	" ..	15 00
3966	Sept. 16	Edward J. Hagan.....	"	Hunts Point, N.S.....	" ..	15 00
3967	Oct. 29	James Allen Rice.	"	Yarmouth, N.S.....	" ..	15 00
3968	" 29	Thomas Pearson.....	"	"	" ..	15 00
3969	Nov. 13	Wilbert A. Card.....	"	Summerville, N.S.....	" ..	15 00
3970	" 13	William Winter.....	"	Yarmouth	" ..	15 00
3971	Dec. 26	Michael Howard..	"	New York, U.S.A....	" ..	15 00
	1913					
3972	Jan. 3	Frederick George Russell	2nd Mate... .	Mount Prospect Glasheen Road Cork Ireland.	Vancouver, B.C.	8 00

No. 1.—LIST of sea-going certificates of competency issued to masters, mates and second mates, during the twelve months ended March 31, 1913—Continued.

No. of certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1913					\$ cts.
3973	" 10	Charles A. Z. Forsell....	Master.	Brooklyn, N.Y., U.S.A.	Yarmouth.....	15 00
3974	" 15	Ambrose Landry.....	"	Carleton, P.Q.....	Yarmouth, N.S.	15 00
3975	" 15	Carl J. R. Kohler.....	Mate.....	Brooklyn, N.Y., U.S.A.	" ..	8 00
3976	" 15	James M. Smith.....	2nd Mate.....	" ..	" ..	8 00
3977	Feb. 4	G. A. Lloyd Kay.	Master.	St. John, N.B.....	" ..	15 00
3978	" 26	Leon O. Everett.....	Mate.....	Bridgetown, N.S.....	" ..	8 00
3979	" 26	William Mogridge	"	New York, U.S.A...	" ..	8 00
3980	" 27	Joscelin Gossett.....	2nd Mate.....	Kent, England....	Vancouver, B.C.	8 00
3981	March 10	Joseph Francis Barker..	"	Glasgow, Scotland...	Vancouver, B.C.	8 00
3982	" 10	Benjamin Marsden Dow.	"	Birkenhead, England.	" ..	8 00
3983	" 10	John Gordon.	"	Govan, Scotland.....	" ..	8 00
3984	" 10	Alexander Anderson....	"	Inverkeithing, Scot land.	" ..	8 00
3985	" 18	Robert N. Anderson....	Master.	Port Elgin, N.B. . .	Yarmouth, N.S.	15 00

No. 2.—LIST of certificates of competency issued to masters and mates of coasting and inland vessels, during the twelve months ended March 31, 1913.

No. of Certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1912.					\$ cts.
6742	April 2	James Schmeisser.....	Master.	Middle LaHave, N.S..	Yarmouth, N.S.	15 00
6743	" 2	George Scott.....	"	St. John, N.B.....	" ..	15 00
6744	" 2	John Harold Hudson. .	"	Midland, Ont....	Toronto, Ont...	15 00
6745	" 2	William McLean.....	Mate.....	Meaford, Ont.....	" ..	6 00
6746	" 2	Thomas Hurst McKenzie	"	Oliphant, Ont.....	" ..	6 00
6747	" 2	William Elgin Osborn..	Master	Toronto, Ont.....	" ..	15 00
6748	" 2	Ernest E. Caron.....	"	L'Islet, P.Q	Montreal, P.Q..	15 00
6749	" 3	John Brannan	Mate.....	Halifax, N.S.....	Halifax, N.S....	6 00
6750	" 2	Lloyd M. Atkins.....	"	"	" ..	6 00
6751	" 2	Huntley O. Giffn.....	"	Goldboro, N.S	" ..	6 00
6752	" 2	Henry Jervis.....	Master.....	Callander, Ont.....	Ottawa, Ont....	15 00
6753	" 2	Charles William Ander- son.....	"	Vancouver, B.C	Vancouver, B.C.	15 00
6754	" 2	Charles William Ander- son.....	Mate.....	"	" ..	6 00
6755	" 2	Sidney Wilfred Collacott.	Master	Okanagan Landing, B.C	Nelson, B.C....	15 00
6756	" 2	Jonas Feather.....	Mate.....	Penticton, B.C	" ..	6 00
6757	" 2	Carl Kreft.....	Master.. .	Vancouver, B.C ..	Vancouver, B.C.	15 00
6758	" 2	Samuel Nelson	"	"	" ..	15 00
6759	" 2	John P. Perry.....	Mate.....	Nalifax, N.S... ..	Halifax, N.S....	6 00
6760	" 2	William Spencer Green..	"	St. John, N.B... ..	Yarmouth, N.S.	6 00
6761	" 2	Charley Louiseau.....	Master	Rainy River, Ont.....	West Selkirk, Man.	15 00
6762	" 2	Lawrence Budreau.....	"	"	" ..	15 00
6763	" 2	Mical Olsen	"	Vancouver, B.C	Vancouver, B.C.	15 06
6764	" 2	James J. Kelly.....	Mate.....	Halifax, N.S.....	Halifax, N.S....	6 00
6765	" 16	Frank Bannerman.....	"	Victoria, B.C.....	Victoria, B.C....	6 00
6766	" 16	William Foulkes.....	"	West Hamilton, Ont..	Toronto, Ont...	6 00
6767	" 16	James Douglas Simpson.	Master.....	Birdsall, Ont.....	" ..	15 00
6768	" 16	Herbert S. Ritcey.....	"	Muskodoboit Harbour, N.S.....	Yarmouth, N.S..	15 00

SESSIONAL PAPER No. 21

No. 2.—LIST of certificates of competency issued to masters and mates of coasting and inland vessels, during the twelve months ended March 31, 1913—*Continued.*

No. of certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1912.					Sets.
6769	"	16 Charles S. Montgomery Howell.....	Mate.....	Selkirk, Man... ..	West Selkirk, Man.	6 00
6770	"	16 William P. Burke.....	Master ...	Charlottetown, P.E.I.	Charlottetown, P.E.I.	15 00
6771	"	16 Robert A. Cassidy.....	Mate.....	Chatham, N.B.....	"	6 00
6772	"	16 Bennett M. Dykeman...	"	St. John, N.B.....	Yarmouth, N.S..	6 00
6773	"	16 Antoine Fournier.....	"	St. Jean, Port Joli, P.Q.	Montreal, P.Q.	6 00
6774	"	16 John B. Murphy.....	Master.....	Ottawa, Ont.....	Ottawa, Ont....	15 00
6775	"	16 Alfred Peter Ross.....	"	Father Point, P.Q....	Montreal, P.Q..	15 00
6776	"	22 Robert Ward.....	"	Toronto, Ont.....	Toronto, Ont....	15 00
6777	"	22 Herbert Newbold Mc Master	"	"	Montreal, P.Q...	15 00
6778	"	22 Philip Grandy	Mate.....	Halifax, N.S.....	Halifax, N.S....	6 00
6779	"	22 Reginald Marshall.....	"	North Vancouver, B.C.	Vancouver, B.C.	6 00
6780	"	22 Gilbert Wells Brewster..	Master.....	Ladner, B.C.....	"	15 00
6781	"	22 Edward Alexander Booth	Mate.....	Kingston, Ont.....	Montreal, P.Q...	6 00
6782	"	22 Samuel Parsons	Master.....	West Selkirk, Man...	West Selkirk, Man.	15 00
6783	"	22 Humphrey A. W. Bryan.	"	"	"	15 00
6784	"	22 William Ernest Gray....	"	Mattawa, Ont.....	Ottawa, Ont....	15 00
6785	"	22 John Edward Sweeney...	"	Sheenborough, P.Q....	"	15 00
6786	May	13 John McIver	"	Southampton, Ont....	Collingwood, Ont	15 00
6787	"	13 Robert Stanley Fraser...	"	Keewatin, Ont.....	West Selkirk, Man.	15 00
6788	"	13 Albert John Moran.....	"	Gaspé, P.Q.....	Halifax, N.S....	15 00
6789	"	13 Alfred George Booker...	Mate.....	Vancouver, B.C....	Vancouver, B.C.	6 00
6790	"	13 Otto Ludlow Estabrooks.	Master.....	Okanagan Landing, B.C.	Nelson, B.C....	15 00
6791	"	13 Fred C. Watts... ..	"	Collingwood, Ont.....	Collingwood, Ont	15 00
6792	"	13 John Murphy.....	"	"	"	15 00
6793	"	13 Septimus William Beaumont	"	Bracebridge, Ont.	"	15 00
6794	"	13 Herbert Young	"	Vancouver, B.C.....	Vancouver, B.C.	15 00
6795	"	17 Charles Henri Koenig...	Mate.....	Quebec, P.Q.....	Quebec, P.Q....	6 00
6796	"	17 John Wallace Thomas...	Master.....	Victoria, B.C.....	Victoria, B.C....	15 00
6797	"	17 John Wallace Thomas...	Mate.....	"	"	6 90
6798	"	17 Leonidas Corriveau.	"	Berthier, P.Q.....	Montreal, P.Q..	6 00
6799	"	17 Percy Val Edwards.....	"	Trout Lake	Nelson, B.C....	6 00
6800	"	17 Johan Syrak Johansson.	Master	Vancouver, B.C.....	Vancouver, B.C.	15 00
6801	"	17 Maurice Vezina.....	Mate	St. Michel, P. Q	Quebec, P.Q.	6 00
6802	"	17 Moulton Simpson.....	Master.....	North Hattey, P. Q....	Montreal, P.Q..	15 00
6803	"	17 Joseph Alexander Toupin	"	Montreal, P.Q.....	"	15 00
6804	"	17 Wilfrid Clement Caron..	Mate.....	L'Islet, P.Q	"	6 00
6805	"	17 Daniel Fraser.....	"	Isle Verte, P.Q.	"	6 00
6806	June	10 John Wesley Smith.....	Master..	Belleville, Ont.....	Collingwood, Ont.	15 00
6807	"	10 William Tremblay.....	Mate... ..	Quai des Eboulements, P.Q.	Montreal, P.Q..	6 00
6808	"	10 Arsene Rajotte..	Master.....	Montreal, P.Q.....	"	15 00
6809	"	10 John McKiernan.....	Mate.....	Vancouver, B.C.....	Vancouver, B.C.	6 00
6810	"	14 Roland Betts.....	Mate.....	Wallace, N.S.....	Halifax, N.S....	6 00
6811	"	14 James Walker Sangster.	Master.....	Victoria, B.C.....	Victoria, B.C....	15 00
6812	"	14 Charles Armstrong Ozon.	Master..	Halifax, N.S.....	Halifax, N.S....	15 00
6813	"	14 Henry H. Dakin.....	Master.....	Newport Point, P, Q..	Yarmouth, N.S.	15 00
6814	"	14 Frank D. Stevens.. .	Mate.....	St. John, N.B.....	"	6 00
6815	"	14 Waldo P. Currier....	Master..	Oromocto, N.B.....	"	15 00
6816	"	20 Michael McCormick....	Master.....	Collingwood, Ont....	Collingwood, Ont.	15 00
6817	"	20 Charles Lambert	Master... ..	Victoria, B.C.....	Victoria, B.C....	15 00
6818	"	20 Havelock Brundige.....	Mate.....	Vancouver, B.C.....	Vancouver, B.C.	6 00
6819	"	20 Walter Livingston Mitchell.	Mate.....	Dartmouth, N.S.....	Halifax, N.S....	6 00
6820	"	20 William James Balcom..	Master..	Halifax, N.S.....	Halifax, N.S....	15 00

4 GEORGE V., A. 1914

No. 2.—LIST of certificates of competency issued to masters and mates of coasting and inland vessels, during the twelve months ended March 31, 1913—*Continued.*

No. of certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1912.					\$ cts.
6821	June 20	Louis Hagen.....	Master..	Vancouver, B.C.....	Vancouver, B.C.	15 00
6822	" 20	Joseph Laforest.....	Master..	Sorel, P.Q.....	Montreal, P.Q..	15 00
6823	" 20	Emile Plante.....	Mate.....	St. Petronille Isle Orleans, P.Q.	"	6 00
6824	" 29	John Arsenault.....	Mate	Baddeck, N.S	North Sydney, N.S.	6 00
6825	" 29	George Humphries.....	Master.....	Victoria, B.C.....	Victoria, B.C...	15 00
6826	" 29	Thomas John Williams..	Master.....	North Arm, S.-S. Co., Vancouver, B.C.	Vancouver, B.C.	15 00
6827	" 29	Thomas Williams.....	Master.....	Vancouver, B.C.....	"	15 00
6828	" 29	Thomas Williams.....	Mate.	"	"	6 00
6829	July 9	John Bernard Johnson..	Master.....	"	"	15 00
6830	" 9	John Bernard Johnson..	Mate.....	"	"	5 00
6831	" 16	Reginald V. McQueen..	Mate.....	Windsor, Ont	Collingwood, Ont.	6 00
6832	" 20	Hans Busch.....	Master.....	Vancouver, B.C.	Vancouver, B.C.	15 00
6833	" 20	Hans Busch.....	Mate.....	"	"	6 00
6834	" 20	Robert Steen..	Mate.....	Victoria, B.C.....	Victoria, B.C...	6 00
6835	Aug. 8	William Walter Hersey..	Mate.....	Freeport, N.S.....	St. John, N.B..	..
6836	" 8	John Isbister.....	Master.....	Esquimalt, B.C.....	Victoria, B.C...	15 00
6837	" 8	William James Fraser...	Master.....	Arrowhead, B.C.....	Nelson, B.C....	15 00
6838	" 9	George Ward.....	Master.....	Vancouver, B.C.....	Vancouver, B.C.	15 00
6839	" 8	George Ward.....	Mate.....	"	"	6 00
6840	" 8	William Frank Lipsett..	Master....	St. John, N.B.....	Yarmouth, N.S.	15 00
6841	" 8	William A. Crowell.....	Mate.....	Dartmouth, N.S.....	"	6 00
6842	" 8	Eugene Coates.....	Mate.....	Hillsburn, N.S.....	"	6 00
6843	" 8	Joseph Horace Paiement	Mate.....	Valleyfield, P.Q.....	Montreal, P.Q.	6 00
6844	" 8	Charles Lariviere.....	Master.....	St. Anne de Bellevue, P.Q.	"	15 00
6845	" 8	William Desrosiers ..	Master.....	Lanoraie, P.Q.....	"	15 00
6846	" 8	Courtney Hutchison.	Master....	Wyman, P.Q.....	"	15 00
6847	" 13	Jonathan Greenwell.....	Master....	Fort William, Ont....	West Selkirk, Man.	15 00
6848	" 13	Edward Georgeson.....	Master.....	Galiano Island, B.C...	Victoria, B.C...	15 00
6849	Sept. 5	William Edward Gesner..	Master.....	Bridgetown, N.S. ..	Yarmouth, N.S.	15 00
6850	" 16	John Alex. Richmond..	Mate.....	Parry Sound	Collingwood, Ont.	6 00
6851	" 16	George Fritz.....	Master.....	Seal Cove, B.C.....	Victoria, B.C...	15 00
6852	" 16	John Fraser Crichton...	Mate.....	Vancouver, B.C.....	Vancouver, B.C.	6 00
6853	" 16	Joseph Mongrain.....	Master.....	Champlain, P.Q.....	Montreal, P.Q..	15 00
6854	" 16	Odber Alman Flewelling	Master..	Oak Point, N.B.....	Yarmouth, N.S.	15 00
6855	" 23	Medley Ingalls..	Mate.....	Victoria, B.C.....	Victoria, B.C...	6 00
6856	" 23	John Gilmore.....	Mate.....	"	"	6 00
6857	" 23	Sydney Chas. Barrington	Mate.....	Dawson, Yukon.....	Dawson, Yukon.	6 00
6858	" 23	David Andrew Bell.....	Mate.....	Arrowhead, B.C.....	Nelson, B.C...	6 00
6859	" 23	John McNaughton.....	Mate.....	Victoria, B.C.....	Victoria, B.C...	6 00
6860	Oct. 2	George Williams.....	Mate.....	Montreal, P.Q.....	Montreal, P.Q..	9 00
6861	" 2	Harley Ernest Creighton	Master.....	Vancouver, B.C.....	Vancouver, B.C.	15 00
6862	" 2	Edward Nelson.....	Mate.....	West Selkirk, Man....	West Selkirk Man.	6 00
6863	" 2	C. Malcolm Wilkie.....	Mate.....	West LaHave, N.S....	Yarmouth, N.S.	6 00
6864	" 8	Medley Ingalls.....	Master.....	Victoria, B.C.....	Victoria, B.C...	15 00
6865	" 10	Edgar Gushne.....	Mate.....	Vancouver, B.C.....	Vancouver, B.C.	6 00
6866	" 15	Donald Campbell.....	Mate.....	Arrowhead, B.C.....	"	6 00
6867	" 15	William A. Cleveland...	Master..	Vancouver, B.C.....	"	15 00
6868	" 15	William Alfred Morrison	Master..	"	"	15 00
6869	" 21	William Alfred Morrison	Mate.....	"	"	6 00
6870	" 21	Samuel Dawe.....	Master.....	"	"	15 00
6871	" 26	William Richard Isherwood.	Master.....	Fort Francis, Ont.....	West Selkirk, Man.	15 00
6872	" 26	Harry C. Mimms....	Master.....	Fort Frances Ont.	West Selkirk, Man.	15 00
6873	" 29	Alf. Sangstad	Mate.....	Vancouver, B.C.....	Vancouver, B.C.	6 00
6874	Nov. 9	Francis L. Hurley	Master....	St. John, N.B.....	Yarmouth, N.S.	15 00

SESSIONAL PAPER No. 21

No. 2.—LIST of certificates of competency issued to masters and mates of coasting and inland vessels, during the twelve months ended March 31, 1913—*Continued.*

No. of certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1912.					\$ cts.
6875	Nov. 9	Daniel Landry.....	Master.....	Point Aconi, N.S.....	N.° Sydney, N.S.	15 00
6876	" 9	Harry Adlem.....	"	Winnipeg, Man.....	West Selkirk, Man.	15 00
6877	" 9	Harry Adlem.....	Mate.....	Winnipeg, Man.....	West Selkirk, Man.	6 00
6878	" 9	Stanley Miles Copp.....	"	Victoria, B.C.....	Vancouver, B.C.	6 00
6879	" 9	William McKenzie.....	Master.....	Maple Valley, Ont....	Montreal, P.Q..	15 00
6880	" 9	Stanley Miles Copp.....	"	Victoria, B.C.....	Vancouver, B.C.	15 00
6881	" 18	Kenneth LaRush.....	Mate.....	Toronto, Ont.	Montreal, P.Q..	6 00
6882	" 22	Philias Beriault.....	"	Ottawa, Ont.....	"	6 00
6883	" 26	Charles Salter	Master.. ..	Upper Granville, N.S.	Yarmouth, N.S.	15 00
6884	Dec. 2	George Smith.....	Mate	Okanagan Landing, B.C.	Nelson, B.C. .	6 00
6885	" 2	Albert Henry Rippon..	"	Vancouver, B.C.....	Vancouver, B.C.	6 00
6886	" 2	Thomas Allen.....	Master.....	Toronto, Ont.....	Toronto, Ont....	15 00
6887	" 6	Edwin J. Geldert.....	"	Lunenburg, N.S.....	Yarmouth, N.S..	15 00
6888	" 19	Lewis Huphman.....	"	Black Point, N.S.	"	15 00
6889	" 19	William H. Murphy.....	"	Clarks Harbour, N.S..	"	15 00
6890	" 19	Christopher Sheils. . .	Mate.....	Drogheda Ireland.....	Vancouver, B.C.	6 00
6891	" 19	Harold Isaac Vince . .	"	Vancouver, B.C.....	"	6 00
6892	" 19	Alfred Edward Seaman..	"	Pugwash, N.S.....	North Sydney, N.S.	6 00
6893	" 19	Alfred Edward Seaman..	Master.....	Pugwash, N.S.....	"	15 00
6894	" 19	Murdoch McLean.....	"	St. John, N.B.....	Yarmouth, N.S.	15 00
6895	" 19	Raymond Collishaw.....	Mate.....	Nanaimo, B.C.....	Vancouver, B.C.	6 00
6896	" 19	Charles Richardson	"	Vancouver, B.C.....	"	6 00
6897	" 24	Charles Richardson	Master.....	Vancouver, B.C.....	"	15 00
	1913.					
6898	Jan. 4	Charles Emil Nordin....	Master.....	East Vancouver, B.C.	Vancouver, B.C.	15 00
6899	" 4	Samuel Hall Bilton.	"	Victoria, B.C.....	"	15 00
6900	" 10	Frank Barl Gould.....	Mate.....	Collingwood, Ont.....	Collingwood, Ont	6 00
6901	" 10	Charles Alexander Martin.	Master.....	Kingston, Ont.....	Montreal, P.Q..	15 00
6902	" 10	Joseph Edward Ouellette	Master.....	Lachine Locks, P.Q...	Montreal, P.Q..	15 00
6903	" 10	Bennett M. Dykeman....	"	Fredericton, N.B.....	Yarmouth, N.S.	15 00
6904	" 10	Alfred Francis.....	"	West Toronto, Ont....	Toronto, Ont....	15 00
6905	" 17	Joseph H. Walker	"	Port Hawkesbury, N.S.	North Sydney, N.S.	15 00
6906	" 17	John Alexander Ferguson	Mate.....	Garden Island, Ont....	Montreal, P.Q..	6 00
6907	" 17	Harry Payson Cousins...	Master.. ..	Digby, N.S.....	Yarmouth, N.S.	15 00
6908	" 17	Harry Finn	"	Windsor, Ont.....	Collingwood, Ont	13 00
6909	" 21	William John Murphy ..	"	Kingston, Ont....	Montreal, P.Q.	15 00
6910	" 24	Harold Francis Hallifax.	"	Collingwood, Ont.	Collingwood, Ont	15 00
6911	" 24	Charles T. F. Granholm3	"	New Westminster, B.C.	Vancouver, B.C.	15 00
6912	" 24	David A. Chambers.....	"	Courtright, Ont.....	Toronto, Ont....	15 00
6913	" 27	John Saunders Cook . .	"	Collingwood, Ont.	Collingwood, Ont	15 00
6914	" 27	William Scott.	Mate.....	Port Dalhousie, Ont...	Toronto, Ont....	6 00
6915	" 27	William Douglas McDiarmid.	Master.. .	Port Burwell, Ont....	"	15 00
6916	" 31	William John Callon....	Mate.....	Toronto, Ont....	Toronto, Ont....	6 00
6917	" 31	Andrew Garster.....	"	Toronto, Ont.....	"	6 00
6918	" 31	Hugh S. Davidson	"	Goderich, Ont	"	6 00
6919	" 31	William Stalker.....	Master, . .	Penetanguishene, Ont.	"	15 00
6920	" 31	Walter Fred Kirk. . .	Mate.....	Lakeport, Ont.....	"	6 00
6921	" 31	James Wood McTaggart.	Master.....	Toronto, Ont.....	"	15 00
6922	" 31	Roy P. Carnegie.....	Mate.....	Rockport, Ont.....	"	6 00
6923	Feb. 7	George Ford	Master... .	Vancouver, B.C.....	Vancouver, B.C.	15 00
6924	" 7	Wilfrid Boudrias.....	Mate.....	Kingston, Ont.....	Montreal, P.Q..	6 00
6925	" 7	Donat Labonté.....	"	Beauharnois, P.Q.....	"	6 00
6926	" 7	Ludger Marchand	"	Champlain, P.Q.....	"	6 00
6927	" 7	Archie Hogue	Master.....	Owen Sound, Ont.....	Collingwood, Ont	15 00
6928	" 7	Daniel Nolan.....	"	Owen Sound, Ont.	"	15 00
6929	" 7	William A. Richmond...	"	Parry Sound, Ont.....	"	15 00

4 GEORGE V., A. 1914

No. 2.—LIST of certificates of competency issued to masters and mates of coasting and inland vessels, during the twelve months ended March 31, 1913—*Continued.*

No. of certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1913.					\$ cts.
6930	Feb.	7 Robert Henry Jewell....	Master.....	Gore Bay, Ont.....	Collingwood, Ont.	15 00
6931	"	7 Robert William Robinson	Mate.. ..	St. John, N.B.....	Yarmouth, N.S.	15 00
6932	"	7 Fred. C. Harris	"	Bear River, N.B.....	"	6 00
6933	"	7 Charles L. Burke.	"	Yarmouth, N.S.....	"	6 00
6934	"	7 John McKernan.....	"	Vancouver, B.C.	Vancouver, B.C.	6 00
6935	"	10 Aloice Lambert.....	"	St. Antoine, P.Q.....	Montreal, P.Q..	6 00
6936	"	10 Alexander Phillips.....	Mate.....	Clark's Harbour, N.S..	Yarmouth, N.S.	6 00
6937	"	10 Goodwin J. Carson... ..	Master.. ..	Toronto, Ont.....	Toronto, Ont...	15 00
6938	"	10 Robert J. Wilson.....	"	Midland, Ont.....	"	15 00
6939	"	10 Oscar M. Wing.....	"	Parry Sound, Ont.....	"	15 00
6940	"	10 William Murcklen	Mate.	Penetang, Ont.....	"	6 00
6941	"	14 Louis Daignault	"	Beauharnois, P.Q.....	Kingston, Ont..	6 00
6942	"	14 Stephen P. Ahern.....	Master.....	Port Dalhousie, Ont...	Toronto, Ont...	15 00
6943	"	14 Harry Ormiston	Mate.....	Victoria, B.C.....	Victoria, B.C...	6 00
6944	"	14 William Purvis Simpson	Master.. ..	Selkirk, Man.....	West Selkirk, Man.....	15 00
6945	"	14 Herman Lysell	"	Vancouver, B.C.....	Vancouver, B.C.	15 00
6946	"	14 James William Jamieson	"	Vancouver, B.C.....	"	15 00
6947	"	14 Christian Berg Henrikson	"	West Vancouver, B.C.	"	15 00
6948	"	14 Christian Berg Henrikson	Mate.....	West Vancouver, B.C.	"	6 00
6949	"	14 Avery Nickerson.....	"	Port Clyde, N.S.....	Yarmouth, N.S.	6 00
6950	"	14 Norman Hsnry Miller...	"	Courtright, Ont	Toronto, Ont...	6 00
6951	"	14 Fred Irish.....	"	Cobourg, Ont.....	"	6 00
6952	"	18 Henrik Johan Larsen....	"	Montreal, P.Q.....	Montreal, P.Q..	6 00
6953	"	18 Onesiphore Scherrer.....	Master.....	Cap St. Ignace, P.Q..	"	15 00
6954	"	18 James Gregory Fletcher.	"	Vancouver, B.C.	Vancouver, B.C.	15 00
6955	"	18 James Gregory Fletcher.	Mate.....	Vancouver, B.C.....	"	6 00
6956	"	18 Thomas E. Hefferman...	Master.....	Picton, Ont.....	Picton, Ont.....	15 00
6957	"	18 Dudley Millard.....	Mate.....	Toronto, Ont.....	Toronto, Ont...	6 00
6958	"	18 Thomas Manson.....	"	Toronto, Ont.....	"	6 00
6959	"	22 Lewis Royal Morton	"	Athabasca Landing....	Edmonton, Alta.	6 00
6960	"	22 Donald Archibald Kennedy.	Master.....	Collingwood, Ont.....	Collingwood, Ont.	15 00
6961	"	22 Francis David Solomon..	Mate.....	Sault Ste. Marie, Ont..	"	15 00
6962	"	22 Charles Henry Causton.,	"	East Toronto, Ont....	"	6 00
6963	"	22 John Robert Montgomery	"	Collingwood, Ont.....	"	6 00
6964	"	22 William Edmond Cornett	Master.....	East Owen Sound, Ont	"	6 00
6965	"	22 Samuel Edward Rigby..	Mate.....	Windsor, Ont.....	"	6 00
6966	"	22 William J. Britton... ..	Master.. ..	Hamilton, Ont.....	Toronto, Ont...	6 00
6967	"	22 James Norman Jackson.	"	Port Burwell, Ont.....	"	15 00
6968	"	22 Bruce Alexander Nicholls	"	Toronto, Ont.....	"	15 00
6969	"	22 William A. Blackwell...	Mate.....	Toronto, Ont	"	6 00
6970	"	26 Joseph Brain.....	Master.....	Beauharnois, P.Q.,...	Montreal, P.Q.	15 00
6971	"	26 Ernest Tremblay.....	"	Montreal, P.Q.....	"	15 00
6972	"	26 Thomas Mills.....	Mate.....	Dickenson's Landing, Ont.	"	6 00
6973	"	26 Harry Lavers.....	"	Collingwood, Ont.	Collingwood, Ont.	6 00
6974	"	26 Angus McLeod.....	"	Collingwood, Ont.....	"	6 00
6975	"	27 John Garfield Pratt.....	Master.....	Toronto, Ont.....	Toronto, Ont...	15 00
6976	Mar.	6 Joseph Maure.....	"	Montreal, P.Q.....	Montreal, P.Q..	15 00
6977	"	6 William James Bennett.	"	Sault Ste. Marie, Ont.	Toronto, Ont ..	15 00
6978	"	6 William McRitchie.....	"	Vancouver, B.C.	Vancouver, B.C.	15 00
6979	"	6 Odilon Gffay.....	"	St. Michel, P.Q.....	Montreal, P.Q..	15 00
6980	"	6 Richard Morphy.....	Mate.....	Toronto, Ont.....	Toronto, Ont...	6 00
6981	"	6 William Wallace Grexton	"	Midland, Ont.....	Collingwood, Ont	6 00
6982	"	6 Gabrlel D. Pentz	Master.....	Lahave, N.S.....	North Sydney, N. S.	15 00
6983	"	6 William Spooner.....	Mate.....	Halifax, N.S.....	Halifax, N.S...	6 00
6984	"	6 Murdock Campbell.....	"	East Vancouver, B.C.	Vancouver, B.C.	6 00
6985	"	6 Frank Ironside.....	Master.....	Collingwood, Ont.	Collingwood, Ont	15 00
6986	"	6 John McLeod.....	Mate.....	Charlottetown, P.E.I.	Charl o t t etown, P.E.I.	6 00
6987	"	6 Llewelyn Taylor.....	Master.. ..	Vancouver, B.C.....	Vancouver, B.C.	15 00
6988	"	18 Alexandre Turbis.	Mate.....	Quebec, P.Q.....	Montreal, P.Q.	6 00

SESSIONAL PAPER No. 21

No. 2.—LIST of certificates of competency issued to masters and mates of coasting and inland vessels, during the twelve months ended March 31, 1913—*Continued.*

No. of certificate.	Date of certificate.	Name.	Grade.	Address.	Where examination was made.	Fee.
	1913.					\$ cts.
6989	Mar. 18	Calvin F. Granville.....	Master..	St. John, N.B.	Yarmouth, N.S.	15 00
6990	" 18	Calvin F. Granville.....	Mate.....	St. John, N.B.....	"	6 00
6991	" 18	Perley William McBride	Master.....	Waterville, N.S.....	"	15 00
6992	" 18	George Wilfrid Miller...	"	Halifax, N.S.....	Halifax, N.S....	15 00
6993	" 18	Robert I. Swansberg....	Mate.....	Halifax, N.S.....	"	6 00
6994	" 18	William C. Gould.....	"	Halifax, N.S.....	"	6 00
6995	" 18	Grant Pyke	Master..	Wolfe Island, Ont....	Kingston, Ont..	15 00
6996	" 18	Leon Beaupre	Mate.....	Kingston, Ont.....	" ..	6 00
6997	" 18	Albert H. Foote.....	Master..	Fergus, Ont.....	Toronto, Ont...	15 00
6998	" 18	John Shoemaker.....	Mate.....	Parkhill, Ont.....	Collingwood, Ont	6 00
6999	" 18	James McDowall.....	"	Owen Sound, Ont.....	"	6 00
7031	" 18	Alexander Brown.....	Master.....	Owen Sound, Ont.....	"	15 00
7032	" 18	Wilfrid Holland.....	"	Peterboro, Ont.....	Toronto, Ont...	15 00
7033	" 18	Frederick James Smith.	"	Tobermory, Ont.....	"	15 00
7034	" 18	Roderick Gunn.....	"	Gunn Road Burnaby, B.C.	Vancouver, B.C.	15 00
7035	" 18	Fred McGillivray.....	Mate.	Victoria, B.C.....	Victoria, B.C...	6 00
7036	" 25	Roderick McDonald.....	"	Goderich, Ont.....	Toronto, Ont...	6 00
7037	" 25	Wesley Hill.....	Master.....	West Gravenhurst, Ont	Collingwood, Ont	15 00
7038	" 25	Allan McDonald.....	"	Wolf Island, Ont.....	Toronto, Ont...	15 00

No. 3.—LIST of Masters' Temporary Certificates issued during the twelve months ended March 31, 1913.

No. of certi- ficate.	Date of certi- ficate.	Name.	Grade.	Address.	Where examination was passed.	Fee.
	1912					\$ cts.
8	April 1..	Joseph Harris Baball. . .	Master Temp..	Parry Sound, Ont....	Collingwood, Ont	5 00
9	" 1..	William Killan Sims....	" ..	Saut Ste. Marie, Ont..	" ..	5 00
10	" 1..	John Cunningham	" ..	Gaudette, P.Q.....	Ottawa, Ont....	5 00
11	" 13..	Theodore Seaman.....	" ..	Sauble Falls, Ont.....	Collingwood, Ont	5 00
12	" 13..	Joseph Nadon	" ..	Montebello, P.Q.....	Ottawa, Ont ...	5 00
13	" 18..	Dougald Gates.....	" ..	Craigmont, Ont.....	" ..	5 00
14	" 18..	Charles McLeod.....	" ..	Cumberland, Ont.....	Montreal, P.Q..	5 00
15	" 13..	James Jackson.....	" ..	Indian White Horse, Y.T.....	" ..	5 00
16	" 13..	James Pendergast.	" ..	Cornwall, Ont.....	Montreal, P.Q..	5 00
17	" 13..	Robert H. Johnston.....	" ..	Port Carling, Ont....	Collingwood, Ont	5 00
18	" 13..	William Cooke.....	" ..	Grenville, P.Q.....	Ottawa, Ont....	5 00
19	" 13..	Philius Gagné.....	" ..	Montmagny, P.Q.....	Quebec, P.Q....	5 00
20	" 17..	Walter William Cabot...	" ..	Dalhousie, N.B.....	Montreal, P.Q..	5 00
21	June 6..	Albert F. Stanton.....	" ..	Port Stanton, Ont...	Collingwood, Ont	5 00
22	" 6..	Thomas P. Christinson..	" ..	Fort William, Ont....	Kenora, Ont ...	5 00
23	" 6..	John Standby.	" ..	Banff, Alb.....	" ..	5 00
24	" 6..	Telesphore Martin.....	" ..	Pointe Fortune, P.Q..	Montreal, P.Q..	5 00
25	" 19..	Charles Alfred Britton..	" ..	Sturgeon Falls, Ont...	Toronto, Ont....	5 00
26	July 16..	Fred Feader.....	" ..	Fort William, Ont....	Kenora, Ont....	5 00
27	" 17..	Robert John Bryan....	" ..	Perth, Ont.....	Ottawa, Ont... ..	5 00
28	" 22..	Albert Giroux.....	" ..	Kenora, Ont.....	Kenora, Ont....	5 00
29	" 22..	Joseph Boucha.....	" ..	" ..	" ..	5 00
30	Aug. 6..	Oscar Dannamaker.....	" ..	Lakefield, Ont.....	" ..	5 00
31	" 7..	Simon Cimon.....	" ..	Roberval, P.Q.....	Quebec, P.Q....	5 00
32	" 7..	William Henry Neil....	" ..	Castleford, Ont.....	Montreal, P.Q..	5 00
33	" 13..	Ole Dahl.....	" ..	Banff, Alb.....	Kenora, Ont....	5 00
34	" 13..	John Nash.....	" ..	Kenora, Ont.....	" ..	5 00
35	" 20..	David Schell.....	" ..	Gravenhurst, Ont.....	Collingwood, Ont	5 00
36	Sept. 16..	David Edward Coveney..	" ..	Sturgeon Lake, Ont...	Kenora, Ont... ..	5 00
37	" 17..	Israël Desforges.....	" ..	Calumet, P.Q.....	Ottawa, Ont... ..	5 00
38	" 23..	Charles E. Miller.....	" ..	Dawson, Y.T.....	Dawson, Y.T....	5 00
39	" 24..	Francis Mailly.....	" ..	St. Pierre de Becquets, P.Q.....	Montreal, P.Q..	5 00
40	Oct. 1..	John Morel.....	" ..	St. Henri de Taillon, P.Q.....	" ..	5 00
41	" 30..	Percy Ferguson.....	" ..	Toronto, Ont.....	Collingwood, Ont	5 00
42	Nov. 8..	Alfred Girard.....	" ..	St. Fulgence, P.Q.....	Montreal, P.Q..	5 00
	1913.					
43	Mar. 18..	Jean J. Crete.....	" ..	Grandes Piles, P.Q....	Ottawa, Ont....	5 00
44	" 25..	John Cunningham.....	" ..	Gaudette, P.Q.....	" ..	5 00

B. F. BURNET.

SESSIONAL PAPER No. 21

APPENDIX No. 12.

LIFE SAVING REPORT FOR 1912-13.

To the Deputy Minister
of Marine and Fisheries,
Ottawa, Ont.

SIR,—I have the honour to submit the following report on the Life-saving Service for the season of 1912-13.

PRINCE EDWARD ISLAND.

Alberton Rocket Brigade.—Mr. Gordon Bennett appointed No. 1 to replace Mr. John Champion. Usual drills carried out.

Cascumpeque.—In October, Mr. J. Hutt was appointed coxswain in the place of Mr. W. Lovett.

Charlottetown.—Usual drills carried out.

Priest Pond Rocket Brigade.—Mr. John Ryan resigned from the position of No. 1, Chas. Campbell appointed in his place. Usual drills carried out.

Souris.—The usual drills were carried out. The boat-house was moved to a more suitable position.

BRITISH COLUMBIA.

Banfield.—Several improvements to the dwellings have been carried out by the crew. On October 13, 1912, the boat went to the assistance of the gasoline boat *J. G. Cox*, which was disabled and in danger of being wrecked. She was brought safely into Banfield creek.

The station was inspected by Mr. Gordon Halkett, inspector of life-saving stations, and well reported on.

Clayoquot.—Commissioned 15th October, 1912. A power boat similar to the one at Banfield creek was recommended for this station and tenders for the same sent out. An excellent report of coxswain and crew was received from Inspector Halkett.

Ucluelet.—April, 1912, a gold watch was awarded to the coxswain, W. L. Thompson, for heroic conduct in endeavouring to save the life of Toralf Wingen, one of the life-boat crew, when the life-boat was capsized.

A new site was chosen and the building of a combined boat-house and dwelling started.

October 21, 1912, life-boat went to the assistance of a Siwash adrift in a boat.

October 26, went to the rescue of Mr. Steward Stone, who was in an exhausted condition on the Kennedy Lake Ucluelet trail.

NEW BRUNSWICK.

Cape Tormentine.—New crew enrolled, and usual drills carried out.

Escuminac.—November 16, life-boat crew rescued two men from the fishing smack *Cormier* in a gale of wind.

Little Wood Island.—This station is permanent throughout the year. During the winter months a 40-ton sloop was hired from McLaughlin Bros. at Seal cove, and,

4 GEORGE V., A. 1914

during the remainder of the year, a twin screw 25-foot Beebe McLellan boat is in use. Although no large wrecks occurred a lot of very useful work was done by the crew at this station in assisting broken down fishing boats, rescuing men adrift in dories and on several occasions they were the means of saving schooners that got ashore and which, without their assistance, would have become total wrecks.

Richibucto.—Station in commission from April to November. Assistance rendered to various fishing boats, but nothing of much importance.

NOVA SCOTIA.

Baker's Cove.—Robt. L. Baker appointed as coxswain in the place of Albert Cain. Usual drills carried out.

Bay View.—A new station established. A 36-foot self-bailing, self-righting 45 horse-power life-boat, built at Bayonne, N.J., for this station and placed there in June, 1912.

A crew consisting of coxswain, mate, engineer and five men compose a permanent crew.

A site was obtained for dwelling-house and building operations commenced. On November 9, 1912, the crew was called out to rescue a fishing boat in distress. On January 21, 1913, rescued two men who were being driven ashore in a boat. In addition to this the life-boat was out several times to assist fishing boats, which were broken down and in danger.

Blanche.—In May went to the rescue of the crew of a fishing schooner which went ashore at Half Moon rocks and became a total wreck.

The station has been connected up by telephone.

Edgar H. Swaine appointed coxswain in place of W. A. B. Smith.

Canso.—W. G. Matthews' services were dispensed with and J. J. Berrigan appointed coxswain in his place. October 20 the schooner *Clara* was wrecked in a gale of wind at the entrance to Canso harbour. The life-boat went to their assistance, and, after a very hard pull, saved the crew of four men and two women.

Cheticamp.—A new station was established here with a boat-house near Aucoin's wharf, and a lookout house with tower about 600 feet from the Caveau Point Range lights connected with the boat-house by telephone.

A 25-foot twin screw 8 horse-power Beebe McLellan self-bailing boat placed there, the crew consisting of coxswain, engineer and four men appointed for the season of navigation, and two men for the lookout tower. The crew took up their duties in October, 1912.

Clarke's Harbour.—August, 1912, went to the assistance of the ss. *Amelia*, ashore on Hospital ledge.

November 20, 1912, went to the assistance of a disabled fishing boat.

Devil's Island.—Usual drills carried out.

Duncan's Cove.—January 17, called out to the assistance of the ss. *Uranium* ashore at Chebucto head, and rendered valuable assistance in transferring passengers to tugs, also carrying lines from the tugs to the stranded steamer.

Herring Cove.—March 15, called out for the wreck of the ss. *Isleworth* at Chebucto head. It was blowing a stiff gale, with heavy sea, and after pulling for some hours the boat was forced to return to her station. In September the services of J. Gorman as coxswain were dispensed with and E. V. Dempsey appointed in his place.

November 14, went to the assistance of the *New Hope* which stranded on Thrum Cap Shoal.

SESSIONAL PAPER No. 21

January 12, called to the assistance of the ss. *Uranium* ashore at Chebucto head and rendered valuable assistance in transferring passengers to tugs and also in carrying lines to the stranded vessel.

Pictou Island.—Duncan McCallum appointed coxswain in place of Alex. Currie. Usual drills carried out.

Port Mouton.—Usual drills carried out.

Scattarie.—J. T. Martell, coxswain, resigned. Jas. Nearing appointed in his place. Usual drills carried out.

Seal Island.—The services of Thos. Symonds, coxswain, were dispensed with and Smith G. Penney appointed in his place. Usual drills carried out.

Westport, Brier Island.—Agreement with Mr. Bowers for subsidizing his boat cancelled and a new one entered into with Mr. W. McDormand.

June, went to the assistance of the pilot schooner *Howard D. Troop* which was dismastered in a gale.

On August 14, a boat with two men in it was reported missing. The life-boat went out and rescued the men after a search lasting about 5 hours.

November 29, went to the assistance of a vessel which went ashore in a north-east gale.

Whitehead, N.S.—John Phalen appointed coxswain in the place of Hugh Munro. Usual drills carried out.

ONTARIO.

Cobourg.—Usual drills carried out.

Collingwood.—Usual drills carried out.

Consecon.—The services of E. P. Cox, coxswain, were dispensed with and Richard Bedford appointed in his place. Usual drills carried out.

Goderich.—Malcolm McDonald was appointed coxswain in the place of Donald McKay. Usual drills carried out.

Kincardine.—Usual drills carried out.

Long Point.—Geo. Wisner, coxswain, dismissed. James Smith appointed in his place. Station commissioned May 1.

May 14, life-boat went to the assistance of the *Sultana*, ashore 6½ miles west of the station.

In November the building of additional accommodation for the crew was commenced.

Station closed in December, 1912.

Point Pelee.—This station was in commission from April 15, 1912, to December 15, 1912. Crew called out twice. First time, in May, to a steamer which ran ashore in a fog. She was hauled off with the assistance of the life-boat crew.

On July 29 three men in canoes were reported in danger owing to a sudden storm springing up. The life-boat went out to their assistance and brought them ashore.

Port Hope.—The services of Wm. Clarke, coxswain, were dispensed with and John McMahon appointed in his place.

On November 2 crew called out at midnight to go to the assistance of the tug *Juno* and barge *J. B. Locke*. The barge sank, but the crew got away in their own boat and were picked up by the life-boat.

Port Stanley.—Usual drills carried out. The town authorities asked for life-saving appliances to be placed along the docks and beach as several drownings have taken place. This matter is under consideration.

Southampton.—Usual drills carried out.

4 GEORGE V., A. 1914

Toronto.—In June, 1912, the proposal to establish a permanent station for the season of navigation was approved. A fast motor launch was hired and crew, consisting of coxswain, engineer and ten men, enrolled. Tenders were sent out for a motor boat with speed of not less than 24 miles an hour, and eventually the tender of the Marine Construction Co. accepted, the boat being completed in November, and did 25 miles an hour on her trial.

In December, 1912, the boat-house was moved from the western gap to the eastern.

In March, 1913, another motor boat was purchased, with a speed of 23 miles an hour.

During the season the following work was done: The regular crew started on June 20, 1912. The first call was on June 20 and the last on October 30. During this period, 117 calls for help were received. Some were false alarms, but 128 people were assisted, 38 of them being actually taken out of the water; 38 broken down launches, 10 sail boats and two canoes were towed into safety.

MAGDALEN ISLANDS.

Entry Island, Que.—On August 24, 1912, a schooner was observed flying signals of distress about three miles to the westward of the station. The life-boat's crew went to her assistance and found her to be the *James A. Grey*, in a sinking condition. The crew were taken off.

REWARDS FOR SAVING LIFE FROM APRIL 1, 1912, TO APRIL 1, 1913.

April 23, 1912.—One gold watch to W. L. Thompson for endeavouring to save the life of Toralf Wingen.

June 8, 1912.—One silver cup, one pair of binoculars and one silver watch to Captain Philip Tocque, O. J. Lee, R.N.R., and W. Berry, respectively, for services at wreck of Schooner *Hibernia*.

August 28, 1912.—Two silver watches to Stuart A. McMillan and Arthur McMillan for saving life at Ballantyne's Cove, N.S.

September 17, 1912.—Three silver watches to Wm. Tzouhalem, Bob Klutwhalem and Donnet Charley for rescuing three passengers from the wreck of the ss. *Iroquois*.

September 27, 1912.—Two silver watches to Wm. A. Bagnell and Howard Bagnell for rescuing Isaac Townsend.

October 9, 1912.—Three gold medals to Wm. Tzouhalem, Bob Klutwhalem and Donnet Charley for rescuing three passengers from the wreck of the ss. *Iroquois*.

October 25, 1912.—One silver cup and one gold watch to Captain F. H. Larnder and Jas. Himmelman in connection with rescues from the steamer *Caledonia*.

December 2, 1912.—Four silver watches to James Manuel, Allen Delorey, Samuel Wagner and John Doliver in connection with rescue of the crew of the schooner *Flora*.

December 2, 1912.—One silver watch to Chas. A. Moses for rescuing Captain Poland of the schooner *Mary M. Lord*.

January 16, 1913.—One pair binoculars to Mr. R. Legate for saving crew of schooner *Caledonia*.

February 11, 1913.—Two silver watches to Gabriel Chiasson and Constant Aucoin for rescuing two fishermen.

HENRY THOMPSON,

Commander R. N. General Superintendent of Life Saving Service.

SESSIONAL PAPER No. 21

EXPENDITURE IN LIFE SAVING SERVICE, 1912-13.

General Account.....		\$ 3,420 03
<i>Nova Scotia—</i>		
Baker's Cove.....	\$ 450 00	
Bay View.....	8,510 19	
Blanche.....	332 85	
Brier Island.....	523 99	
Canso.....	430 90	
Cheticamp.....	5,620 01	
Clarke's Harbour.....	318 92	
Devil's Island.....	525 00	
Duncan Cove.....	517 00	
Herring Cove.....	790 37	
Pictou.....	271 00	
Port Mouton.....	271 00	
Sable Island.....	5,765 08	
Scattarie.....	368 04	
Seal Island.....	637 50	
St. Paul's Island.....	4,502 00	
Whitehead.....	294 61	
		30,128 46
<i>Prince Edward Island—</i>		
Alberton.....	\$ 346 65	
Casumpeque.....	266 45	
Charlottetown.....	435 75	
Priest Pond.....	467 91	
Souris.....	409 60	
		1,926 36
<i>New Brunswick—</i>		
Cape Tormentine.....	\$ 315 00	
Escuminac.....	483 62	
Little Wood Island.....	6,596 72	
Richibucto.....	4,669 94	
		12,065 28
<i>Quebec—</i>		
Entry Island.....	\$ 101 52	
		101 52
<i>Ontario—</i>		
Cobourg.....	\$ 233 50	
Collingwood.....	271 00	
Goderich.....	344 10	
Kincardine.....	273 92	
Long Point.....	7,095 48	
Point Pelée.....	4,449 42	
Port Hope.....	395 56	
Port Stanley.....	287 00	
Southampton.....	381 83	
Toronto Island.....	11,627 31	
Weller's Bay.....	297 85	
		25,656 97
<i>British Columbia—</i>		
Banfield.....	\$10,794 48	
Clayoquot.....	4,260 45	
Cloose.....	150 00	
Tassiat.....	451 59	
Ucluelet.....	6,770 31	
West coast shelter sheds.....	49 00	
		22,475 83
		\$95,774 45
Outstanding advance.....		69 38
		\$95,843 83
Vote.....		\$96,000 00
Expenditure.....		95,843 83
Balance.....		\$ 156 17

LIFE-SAVING Stations maintained

Number.	Stations.	Established.	Coxswain.	Crew.	Coxswain's salary. Per annum.	Pay of Crew.
					\$	
1	New Brunswick— Little Wood Island..	1910	Harry Harvey....	8	.....	Coxswain \$60 per month, crew \$3 per month, 75c. a day board.
2	Richibucto..	1907	Albert Long.....	8	.....	Coxswain \$60 per month, crew \$35 per month, 50c. a day board during season.
3	Point Escuminac.....	1908	E. F. Flieger.....	7	75	\$2.00 per drill.....
4	Cape Tormentine..	1912	I. Allen.....	7	75	"
5	Nova Scotia— Baker's Cove...	1886	R. L. Baker.....	7	75	"
6	Blanche	1889	Edgar H. Swaine .	7	75	"
7	Clark's Harbour.....	1900	W. D. Attwood,..	7	75	"
8	Canso .....	.....	J. J. Berrigan . .	7	75	"
9	Devil's Island.....	1885	B. H. Henneberry.	7	75	"
10	Duncan's Cove .	1886	J. W. Holland....	7	75	"
11	Herring Cove.....	1885	Edw. V. Dempsey.	7	75	"
12	Pictou Island.....	1889	Duncan McCallum	7	75	"
13	Port Mouton . . .	1889	Walter Cooke	7	75	"
14	Scattarie	1885	Jas. Nearing.....	7	75	"
15	Seal Island	1880	Smith G. Penney..	7	250	\$100 per annum.....
16	St. Paul's Island	1885	Supt. Humane Establishment.	3	.....	\$300 each per annum.....
17	White Head	1890	John Phalen	7	75	\$2 per drill and extra when saving life.
18	Sable Island.....	1885	{ Douglas Honneberry. Jas. Ritchey.....	..... .....	250 250	Paid as island staff..
19	Cheticamp, N.S.....	1911	M. Maillett....	7	....	Com. \$60, eng. \$50, crew \$35 during season of navigation.
20	Bay View (Digby Co.)	1911	J. W. Hayden....	7	.....	Com. \$60 per mon., eng. \$50, crew \$35 and \$15 a month board.
21	Prince Edward Island— Priest Pond	1909	Chas. Campbell...	12	75	\$2 per drill and extra when saving life.
22	Charlottetown.....	1907	E. White.....	6	75	\$2 per drill and extra when saving life.
23	Souris.....	1907	Pius Cheverie	7	75	\$2 per drill and extra when saving life.
24	Alberton	1907	Gordon Bennett...	12	75	\$2 per drill and extra when saving life.
25	Cascumpeque.....	.....	Joshua Hutt.....	8	75	\$2 per drill and extra when saving life.

SESSIONAL PAPER No. 21
by the Dominion Government.

Description of Boat.	Cost.	Where Built.	Equipment.	Remarks.
	\$			
Beebe-McLellan twin screw, motor boat.	2,500	Sorel, P.Q.....	Full regulation..	Station built 1911 and tele- phone communications established between Grand Rock, Little Wood Island and Seal Cove.
Race point surf-boat, 24 feet long.	225	"	" ..	New dwelling house in com- mission during season of navigation.
Beebe-McLellan self-bailing.....	225	"	" ..	Boathouse to be built.
" "	250	"	" ..	
Dobbin's pattern self-righting, 25 feet long.	575	Dartmouth, N.S.	" ..	Iron rails laid in 1900.
Beebe-McLellan surf-boat, self-bailing, 25 feet long.	250	" ..	" ..	New boat, 1901.
Beebe-McLellan self-bailing, 25 feet long, low ends.	250	" ..	" ..	Boathouse completed June 7, 1909.
Dobbin's pattern, surf-boat, self-bailing, 25 feet long.	575	" ..	" ..	Lyle gun at this station.
Beebe-McLellan surf-boat, self-bailing, 25 feet long.	250	Shelburne, N.S..	" ..	Lyle gun at this station and new boat in 1903.
" " ..	250	" ..	" ..	
Dobbin's pattern, self-righting and bailing, 25 feet long.	575	Dartmouth, N.S.	" ..	
" " ..	575	" ..	" ..	
Beebe-McLellan surf-boat, self-bailing, 25 feet long.	250	Shelburne, N.S..	" ..	New boat in 1903.
Beebe-McLellan boat on east side.	240	" ..	" ..	" "
Beebe-McLellan boat on west side.	240	Halifax, N.S....	" ..	" "
Beebe-McLellan self-bailing, 25 feet long, low ends.	250	Shelburne, N.S..	" ..	Lyle gun here since 1903.
Dobbin's pattern, surf-boat, self-bailing, 25 feet long.	575	Dartmouth, N.S.	" ..	
Two Dobbin's pattern, self-righting and bailing, and one Beebe-McLellan surf-bailing.	1,100	Halifax, N.S....	" ..	Lyle gun and rocket appar- atus at this station. Cox- swain under control of Supt. of Humane Estab- lishment.
Beebe-McLellan twin screw, motor boat.	2,500	Sorel, Q.....	" ..	New station with lookout tower and telephone com- munication has been com- pleted.
36 feet, self-bailing, self-righting power boat.	9,500	Bayonne, N.J ..	" ..	Station in the course of con- struction.
Board of Trade apparatus .....	.....	England	" ..	
Beebe-McLellan self-bailing	225	Shelburne, N.S..	" ..	
" "	225	" ..	" ..	
" " .....	.....	" ..	" ..	Rocket apparatus has been placed and house for the same.
Board of Trade's rocket appar- atus.	.....	England	" ..	

LIFE SAVING Stations maintained by

Number.	Stations.	Established.	Coxswain.	Crew.	Coxswain's salary. Per annum.	Pay of Crew.
	<i>British Columbia -</i>					
26	Banfield	1909 1907	Geo. Murray. . .	11	. . . . .	Coxswain \$110 per month, eng. \$75, crew \$65 per month, 70c. for board.
27	Ucluelet	1908	W. L. Thompson .	9	. . . . .	Coxswain \$85 per month, \$65 per month for men during season and 65c. board.
28	Tassiat.	1907	W. Kennedy. . . .	1	66	Patrol.
29	Clayoquot	1908	A. Arnet	8	85	\$65 per month when employed, 70c per day board.
	<i>Ontario—Great Lakes -</i>					
30	Cobourg	1882	D. Rooney	6	75	\$2 per drill and extra when saving life.
31	Collingwood	1885	G. F. Watts	7	75	" " " . .
32	Goderich	1886	Malc. McDonald. .	7	75	" " " . .
33	Kincardine	1903	Thos. McGaw	7	75	" " " . .
34	Long Point	1902	Jas. Smith	9	75	1st April to Dec., cox. \$60 per month, crew \$45 per month, 75c per day board.
35	Point Pelee.	1900	L. Wilkinson. . . .	7	75	1st April to 15 Dec., cox. \$60 per month, crew \$50 per month, 75c per day board.
36	Port Hope	1889	John McMahon. . .	7	75	" " " . .
37	Port Stanley	1885	J. R. Moore.	7	75	" " " . .
38	Toronto Island	1883	Frank Ward	11	75	Cap. \$100 per month, mate \$80, 2nd mate \$70 and crew \$65, and 75c. per day, board allowance, during season of navigation.
39	Consecon	1898	R. Bedford.	7	75	\$2 per drill.
40	Southampton.	1907	Hector McLeod. . .	7	75	" "

NOTE—There are several other places in Canada, not regularly organized, which receive support from N.S., Cape Tormentine, N.B., and Wellington on Lake Ontario. There is also a life-saving station at

SESSIONAL PAPER No. 21

the Government—*Concluded.*

Description of Boat.	Cost.	Where built.	Equipment.	Remarks.
	\$			
Self-righting, self-bailing power, lifeboat, 36 feet long.	1,184 52	Bayonne City, U.S.A.	Full regulation..	New motor boat and Lyle gun in combination with Pachena Bay.
Doherty's Improved Beebe-McLellan, 25 feet long.	575	Vancouver Shipyard Co., Vancouver, B.C.	" ..	Placed at Pachena Bay.
Doherty's Improved Beebe-McLellan, 25 feet long.	575	Vancouver Shipyard Co.	Full regulation..	A 36-ft.self-bailingself-righting 45 horse power has been ordered for this station.
Dobbin's pattern, self-righting and bailing.	750	Goderich, Ont..	" ..	
Beebe-McLellan self-bailing surf-boat.	375	Collingwood, O..	" ..	New boat in 1896.
Surf-boat.	330	Collingwood, O..	" ..	New boat in 1892.
Beebe-McLellan self-bailing, surf-boat.	350	" ..	" ..	New boat in 1903.
Surf-boat.....	500	" ..	" ..	Station moved to east end of Point. Telephone communication being established.
"	350	" ..	" ..	A tramway has been constructed at this station.
Dobbin's pattern, self-righting and bailing.	620	Goderich, Ont..	" ..	
Beebe-McLellan surf-boat, self-bailing, 25 feet long.	350	Collingwood, O..	" ..	
Dobbin's pattern, self-righting and bailing.	600	Goderich, Ont..	" ..	2 motor boats one 25 miles an hour, the other one 24 miles an hour, have been placed here. The station was moved to Ward's Island and plans are being prepared for a sub station at Hanlan's Point.
" " "	750	" ..	" ..	Removed from Wellington in 1893.
Beebe-McLellan surf-boat, self-bailing.	330	Collingwood, O..	" ..	

the Dominion Government, where there is a life-saving service of more or less importance, such as Halifax Victoria, B.C., maintained by the Victoria Life Saving Association.

CITADEL SIGNAL STATION, HALIFAX, N.S.

RECORD of Shipping as per record folio from April 1, 1912, to March 31, 1913.

Months.	Men of War, British.			Men of War, Foreign.			Steamers, 1st Class.			Steamers, 2nd Class.			Ships, Barques and Barquentines.			Brigs and Brigantines.			Schooners, 3 mast or bearing Pt. Signal.			Monthly Totals.		
	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.
1912-1913.																								
April							87	86	1	35	35		1	1		2	2		8	8		133	132	1
May	2	2					48	45	3	46	46		2	2					7	7		105	102	3
June				2	2		44	41	3	58	58		1	1					14	14		119	116	3
July ..				1	1		63	60	3	46	46		3	3					12	12		125	122	3
August ...	1	1					61	55	6	54	54		2	2					14	14		132	126	6
September...				2	2		63	61	2	64	64								12	12		141	139	2
October.....	1	1					63	58	5	58	58		3	3					16	16		141	136	5
November....	1	1					68	68		47	47		1	1					5	5		122	122	
December.....							85	83	2	54	54								7	7		146	144	2
January							80	78	2	57	57								3	3		140	138	2
February							69	69		30	30								2	2		101	101	
March							84	84		25	25								4	4		113	113	
Totals...	5	5		5	5		815	788	27	574	574		13	13		2	2		104	104		1518	1491	27

Total vessels reported 1,518
" arrived.. 1,491
" passed..... 27

S. T. KILBURN,
Capt. R. C. E., Supt. of Signals.

SESSIONAL PAPER No. 21

APPENDIX No. 13.

SABLE ISLAND.

HALIFAX, N.S., January 5, 1913.

C. H. HARVEY, Esq.,
Agent Marine and Fisheries,
Halifax.

SIR,—I submit the following report for Sable Island for the year ending December, 31, 1913:

WRECKS.

August 14, ss. *Eric*, 1,788 tons, of Cardiff, Captain Corner, from Rocario, with maize, struck the south side one mile east of main station during mild weather and dense fog. A small amount of the cargo was salvaged by the steamers *Bridgewater* and *Seal*. On the 19th a heavy southeastern came, which broke her amidships, washed off the hatches, and destroyed balance of cargo. As the crew had refused to leave previous to this, they were safely brought ashore on the morning of the 20th, in three trips of the life-boat. Steamer at this date completely broken up, and level with the sea.

BOATS AND APPARATUS.

These remain as in last report, having received no injury during the year.

STAFF CHANGES.

None of importance occurred during the year. A. Northup and family were placed in charge of the old No. 2 station, temporarily.

REPAIRS.

As there was a carpenter only a part of the year, not as much as formerly was done at No. 1 station.

Roof of boat and wagon house re-shingled. Two sides, roof of cattle barn reshingled and repaired.

West Light.—New porch on dwelling and repair to spouts, etc. Old illuminating apparatus removed and replaced with 55 m.m. Diamond vapour lamp, and dioptric.

Old No. 2.—Building repaired, and small barn commenced.

STOCK ON HAND AND KILLED.

This is the same as in former years, and about the same number killed at intervals and supplied to stations fresh.

SHIPPED.

54 barrels cranberries.

35 ponies.

2 barrels salted hides.

1 lot of old rope and wreckage salvaged from *Eric*.

Your obedient servant,

R. J. BOUTILIER,
Superintendent Sable Island.

APPENDIX No. 14.**BOARD OF STEAMBOAT INSPECTION, CHAIRMAN'S REPORT.**

OTTAWA, October 15, 1913.

To the Deputy Minister
of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit, as follows, the annual report of the Steamboat Inspection Service for the fiscal year ending March 31, 1913.

STAFF.

Mr. Edward Adams, chairman since the year 1894, and, for many years previous, inspector at Kingston, resigned on the 1st August, 1912. For the balance of the year there was a deputy chairman, Inspector Mr. Dodds, holding this position until incapacitated by illness, thereafter, Inspector Mr. Wm. Laurie was deputy chairman.

Owing to the large increase in the work of this office, it has been found necessary to have an assistant chairman. This position was filled, after a competitive examination, by the appointment of Mr. Frank McDonnell on the 1st October, 1912.

With a view to increase the efficiency of the service, certain changes have been made in the method of dealing with inspection reports. This has necessitated additional clerical assistance in the chairman's office, which was provided by the appointment of Mr. H. L. Lucas, on the 17th February, 1913.

To fill the place of the late Mr. Seeley, whose death was noted in the last report, Mr. Adams McDougall was appointed inspector of hulls and equipment for the Nova Scotia district, this appointment dating from the 27th April, 1912.

It is with regret that I note here the death, on the 2nd September, 1912, of Mr. J. A. Thomson, for many years inspector of boilers and machinery at Victoria, B.C.

Owing to the increase of work in the Kenora district, it was necessary to have an additional inspector of boilers and machinery. Mr. W. J. Vigers was appointed to this position on the 19th September, 1912, his headquarters being fixed at Port Arthur.

On the 1st October, 1912, Mr. J. E. Lunan was appointed an inspector of boilers and machinery for the Montreal district to take the place of Mr. Louis Arpin, resigned.

The services of Mr. J. C. Kinghorn, formerly inspector of hulls and equipment at Victoria, B.C., terminated on the 30th November, 1912.

On the 25th January, 1912, Messrs. Bert Mantrop and F. F. Pickard were appointed to the Victoria, B.C. district, the former as inspector of boilers and machinery to replace the late Mr. Thomson, the latter as inspector of hulls and equipment in place of Mr. Kinghorn.

BOARD MEETING.

During the year, the following board meetings were held:—

From the 1st to the 5th April, a board sat at Halifax in connection with the examination of Mr. Adams McDougall, afterwards appointed to the position of inspector of hulls and equipment for Nova Scotia.

On the 13th May, a board sat at Ottawa in connection with the examination of applicants for the position of assistant chairman of the board of steamboat inspection.

SESSIONAL PAPER No. 21

From the 26th August till the 5th September a board sat at Toronto in connection with the examination of candidates for the positions of inspectors of boilers and machinery at Port Arthur and Montreal.

From the 9th till the 17th December, a general board meeting sat at Ottawa to consider the revision of the rules governing steamboat inspection. Advantage was taken by this board to examine candidates for the positions of inspector of boilers and machinery and of hulls and equipment at Victoria, B.C.

PROSECUTIONS.

Charges were laid against the owners of the gasoline launches *Lorna Doone*, *Blanch B*, and *Christella*, for carrying passengers in excess of the number allowed by the certificates of the respective boats.

In the cases of the *Lorna Doone* and *Christella*, the court did not consider the evidence sufficient to warrant a conviction.

The evidence in regard to the *Blanch B* being of a nature similar to that produced for the boats above mentioned the case was not proceeded with.

CASUALTIES.

The following are the casualties reported from the several divisions during the year ending March 31, 1913.

Nova Scotia Division.

On November 13, 1912, the ss. *Douglas H. Thomas*, in attempting to cross the bows of the ss. *City of Sydney*, in Sydney harbour, was run down. The *Douglas H. Thomas* heeled over so that five men went overboard and were drowned.

On November 14, 1912, the ss. *Morien*, coal laden, cleared from Louisburg, C.B., for Placentia, Newfoundland. The ship with her cargo and crew of fourteen is since missing.

On January 15, 1913, while the ss. *Goliah* was proceeding from Halifax to Chebucto head the furnaces and combination chamber collapsed, due to low water. The ship was towed back to the wharf by the ss. *Scotsman*. No casualties.

New Brunswick and Prince Edward Island Division.

On November 6, 1912, during the night, the steam yacht *Lolita* caught fire while lying in her winter quarters. The house and part of the hull were destroyed before the fire was controlled. No casualties.

On February 10, 1913, while the ferry steamer *Ludlow* was in her east side dock at St. John the ss. *Knutsford* struck her, doing damage to hull and guards. The *Ludlow* was repaired at West St. John and is now in commission. No casualties.

Quebec Division.

On May 9, 1912, the tug *Marie Stella* of Quebec, struck a piece of ice in the Saguenay river and sank, becoming a total loss. No casualties.

On May 14, 1912, the tug *William Hackett*, of Quebec, on a voyage from Quebec to Halifax, N.S., sprang a leak in Chaleur bay, and was beached to prevent sinking; since then the machinery and boilers have been taken out, and the hull abandoned. No casualties.

Sorel Division.

On November 2, 1912, the passenger steamer *La Tuque*, of Quebec, while lying in winter quarters at the point of Madeline, on the river St. Maurice, Grandes Piles, was burned to the water's edge; fire started during the night; ship totally destroyed and sank in about 15 feet of water. Cause of fire unknown; no casualties.

Montreal Division.

On July 7, 1912, the ss. *Florida*, of Montreal, while lying at her wharf at Montreal was burned to the water's edge. Cause of fire unknown; no casualties.

On May 27, 1912, the ss. *Mildred*, of Ottawa, was wrecked by going over the Government dam at the Poupore lock on the Lièvre river. The accident was caused by a line fouling the propeller, preventing the engines from reversing. There were only three of the crew on board at the time who escaped by jumping on to the pier before the boat went over the dam. Hull and machinery a total loss.

On November 1, 1912, the ss. *Cecilia L.*, of Montreal, while crossing from Lachine to Valleyfield, foundered during a severe gale. Eight of the passengers and four of the crew were drowned. The department authorized an investigation to obtain full particulars pertaining to this disaster, and from the evidence produced it appeared that the cargo shifted in the heavy sea, causing her to heel over and fill. The vessel remains where she sank in about 20 feet of water, abandoned.

On November 12, 1912, the ss. *Mayflower*, of Ottawa, while proceeding from Barry's bay to Combermere, foundered, nine persons being lost. An investigation was held, the finding of which was that the ship sprang a leak from working in a heavy sea.

Kingston Division.

On May 18, 1912, the ss. *Iona*, coal laden, while making a trip down lake Ontario, caught fire and sank near Henderson harbour. The crew escaped in the life-boats. Cause of fire supposed to be spontaneous combustion.

On November 15, 1912, the ss. *S. & Y.*, while making a trip on the Montreal river, with passengers, struck a sunken log end on, and sank immediately. All on board escaped to the shore without injury.

On November 23, 1912, the ss. *Keybell*, on a trip from Montreal to Port Colborne, while crossing lake Ontario broke her high pressure cylinder cover and piston and cracked the cylinder. No casualties.

On December 10, 1912, the ss. *Sowards*, while at her dock in Kingston, was partly destroyed by fire. The after cabin was completely destroyed but the fire was extinguished before it reached the hull. No casualties.

Toronto Division.

On June 5, 1912, the ss. *Ella Ross*, of Deseronto, was partially destroyed by fire at Parry Harbour, Georgian bay. Cause of fire unknown.

On June 26, 1912, the ss. *Bothnia*, of Montreal, collided with the United States ss. *Eddy* in St. Clair river, near stag island, and one of the crew was drowned. Steamer abandoned as a total loss.

On July 6, 1912, a fracture was discovered in the port shaft of the ss. *Frontier* of Picton. The steamer was on lake Ontario between Niagara and Toronto and returned to Toronto under her own power; a new shaft was fitted.

On July 6, 1912, the steam yacht *Nomawa*, of Kingston, was totally destroyed by fire at Port Carling, Muskoka. Cause of fire unknown.

On July 7, 1912, the ss. *Emma*, of Toronto, was totally destroyed by fire on Georgian bay, between Port McNicol and Owen Sound. Cause of fire unknown.

On August 2, 1912, the starboard shaft of the ss. *Nipissing*, of Toronto, was broken. A new shaft was fitted, but the steamer did not again go into commission last season.

Collingwood Division.

On July 5, 1912, the ss. *Agnes Smith*, of Sault Ste. Marie, after having been released from a reef in the North Channel was being towed alongside of the

SESSIONAL PAPER No. 21

ss. *Wayne-Isbell*, of Sault Ste. Marie, to a dry-dock when both ran aground on a shoal near Fox island, caught fire and became total losses. Cause of fire unknown. No casualties.

On July 27, 1912, the ss. *J. L. Beckwith*, of Sault Ste. Marie, ran ashore and was wrecked on Sandy Island, lake Superior. No casualties.

On August 31, 1912, the ss. *Mystery*, of Owen Sound, caught fire and sank at White Cloud island, Georgian bay. Cause of fire unknown. No casualties.

On February 2, 1913, the ss. *Manitou*, of Goderich, caught fire and sank at Owen Sound. This steamer has been raised and is now being repaired. Cause of fire unknown. No casualties.

On November 21, 1912, the ss. *Geraldine*, of Collingwood, on her way from Parry Sound to Penetanguishene, ran on a rock near Copper Head, Georgian bay and sank in 16 feet of water. Owing to the lateness of the season and rough weather the owners were unable to raise her at the time. Extent of damages not known. No casualties.

Manitoba and the Northwest Provinces Division.

On September 29, 1912, at 6 a.m., the ss. *Winnitoba*, of Winnipeg, while lying at her dock, being laid up for the winter, was totally destroyed by fire. Cause of fire unknown.

On November 2, 1912, the Government tug *Sir Hector*, while on the way up lake Winnipeg in a snowstorm, at 1.30 a.m., ran on a reef near Sturgeon island. The storm increased until the following day, when she became a total wreck.

Vancouver and Yukon Division.

On the morning of June 26, 1912, the steam tug *Sea Wolf*, of Vancouver, B.C., caught fire and burned to the water's edge, becoming a total loss. Cause of fire unknown. Boiler and machinery salvaged. No lives lost.

On January 7, 1913, at 3.43 a.m., the ss. *Cheslakee*, of Vancouver, B.C., shortly after leaving Van Anda, was struck by a heavy squall and shipped a heavy sea which caused her to take a list to port, her condition becoming serious. The vessel was immediately turned back for Van Anda wharf but there turned over and sank. Eighty-five passengers and 29 of the crew were saved, 7 persons were lost. The vessel was afterwards raised and is now undergoing extensive alterations.

On February 20, 1913, the steam tug *Charlie Gilley*, of New Westminster, B.C., was totally destroyed by fire. Cause of fire unknown. No casualties.

British Columbia Division.

On March 6-7, 1912, the ss. *Hazel Dollar*, while on a voyage from Puget Sound to China ports, encountered a heavy gale off the Aleutian islands, receiving severe damage to deck houses, and having rudder head broken. It was necessary for the ship to return to Esquimalt for repairs, on completion of which she proceeded on her voyage.

On March 25, 1912, the ss. *Prince Albert*, of Prince Rupert, while outward bound from Victoria to Prince Rupert, grounded on Shoal point. On examination she was found to be leaking in No. 3 tank. The ship was hauled on British Columbia Marine railway on March 27, 1912. The damage sustained was found to consist of rivets loosened along keel plates, from under foot of mainmast aft. Repairs having been effected, vessel proceeded on her voyage.

On May 1, 1912, the ss. *Prince John*, of Prince Rupert, while proceeding from Massett, Queen Charlotte islands, to Prince Rupert, struck crossing Massett bar. On examination three floor plates were found to be buckled, and shell plating under

starboard boiler pierced in two places. Temporary repairs having been effected, the ship continued her voyage. Permanent repairs were carried out later.

On November 5, 1912, while the tug *Bute*, of Victoria, was manœuvring to take scow loaded with sand and gravel in tow off Producers' Sand and Gravel wharf, Royal bay, the tow line fouled propeller. The vessel then became unmanageable, and with a heavy swell running, grounded and filled, being extensively damaged. She was afterwards salved and repaired on Victoria Machinery Depot Co.'s Marine railway, Victoria.

On December 15, 1912, the tug *Nidge*, of Victoria, while on a voyage from Beecher bay to Victoria, with passengers and with water-logged scow in tow, when off Albert Head lock, a strong breeze blowing and heavy swell running, the circulating pump broke down. Whilst repairing the pump the ship was allowed to drift and grounded on rocks near Macaulay point, becoming a total wreck. With much difficulty the passengers and crew were taken off, there being no casualties.

On January 15, 1913, the ss. *Oscar*, laden with forty-nine tons of explosives, while proceeding from Nanaimo to Vancouver was forced by stress of weather to return to Nanaimo. While returning, fire broke out in the bunkers and the ship was beached at Gallows point. The crew abandoned her and at 1.15 p.m. the fire reached the cargo, causing a violent explosion, entirely wrecking the ship and doing a considerable amount of damage in the vicinity of Nanaimo. There was no loss of life.

NUMBER of steam vessels reported as known by the inspectors of steamboats in the Dominion for the year ending March 31, 1913, also the number of steamers inspected but not registered in the Dominion for the same period.

Division.	Number of Dominion registered steamers.	Gross tonnage of Dominion registered steamers.	Number of steamers inspected but not registered in the Dominion.	Gross tonnage of steamers inspected but not registered in the Dominion.
Nova Scotia	193	50,280 10	20	29,366 09
New Brunswick	192	43,452 04	8	13,968 24
Quebec	103	27,889 13	13	29,321 02
Sorel	124	45,995 00		
Montreal	203	27,168 00	8	24,172 00
Kingston	180	37,554 00	7	10,234 00
Toronto	356	11,777 85	53	43,632 00
Collingwood	168	64,185 00	9	16,108 00
Manitoba and Northwest Provinces	212	46,522 00	15	72,135 18
Vancouver and Yukon	280	54,513 60	14	9,570 87
Victoria	128	65,924 30	26	31,656 63
Total	2,139	475,261 02	183	280,164 03

SESSIONAL PAPER No. 21

NUMBER of Dominion registered steamers inspected and their gross tonnage with amount of fees collected on account of steamboat inspection during the year ended March 31, 1913.

Division.	Number of Dominion registered steamers inspected.	Gross tonnage of Dominion registered steamers inspected.	Amount of fees collected account of steamboat inspection.
			\$ cts.
Nova Scotia.....	167	42,361·19	2,189 55
New Brunswick....	151	20,938·31	
Quebec.....	92	27,514·15	309 41
Sorel.....	107	43,117·00	
Montreal.....	172	25,137·00	628 00
Kingston.....	161	36,756·00	
Toronto.....	359	64,674·00	184 08
Collingwood.....	124	61,291·00	
Manitoba and Northwest Provinces....	105	39,279·33	
Vancouver and Yukon.....	239	49,578·75	285 96
Victoria.....	119	64,181·53	1,124 00
Total.....	1,796	474,828·26	4,721 00

I would respectfully call your attention to the appendix to this report, published separately as a supplement to the Annual Report, in which will be found tables as follows, for the fiscal year ended March 31, 1913:—

Tables showing, for the fiscal year ended March 31, 1913:—

(1) Steamships inspected with their gross tonnage and with the number of passengers they were certificated for, the date of expiry of certificate, and trade and route for which they were certificated.

(2) Steamships not inspected with their gross tonnage, the trade in which they would be employed and reason for not being inspected.

(3) Steamships added to the Dominion, with particulars as to their tonnage, power, etc.

(4) Steamships lost, broken up or otherwise taken out of commission with gross tonnage, reason for removal from commission, etc.

I have the honour to be, sir,

Your obedient servant,

T. R. FERGUSON,
Chairman.

APPENDIX No. 15.

LIST of live stock shipped from May, 1912, to May, 1913, to ports in Great Britain.

MONTREAL.

Months.	Sheep.	Horses.	Cattle.	Mules.	U.S. Cattle.
1912.					
May.....		38	1,884	4	
June.....		82	1,869	49	106
July.....			1,872	50	
August.....			417		
September.....		3	276		
October.....	178	49	147	92	
November.....		3	4	119	
Total.....	178	175	6,469	314	106

ST. JOHN, N.B.

The Agent of the Department of Marine and Fisheries states that no reports of inspectors were received and that no shipment of live stock was made.

COMPARATIVE STATEMENT of the Number of Cattle shipped from Canada to British ports from the years 1903-04 to 1912-13.

	SHEEP.			CATTLE.			HORSES.			TOTALS.		
	Montreal.	St. John.	Halifax.	Montreal.	St. John.	Halifax.	Montreal.	St. John.	Halifax.	Sheep.	Cattle.	Horses.
1912-13...	178	Nil.	Nil.	6,469	Nil.	Nil.	175	Nil.	Nil.	178	6,469	175
1911-12...	3,725	1,798	"	45,866	2,001	"	138	* 14	"	5,523	47,967	152
1910-11...	248	2,508	"	72,555	3,301	"	497	19	"	2,756	75,856	516
1909-10...	1,616	Nil.	"	94,314	4,632	"	286	Nil.	"	1,616	98,946	286
1908-9....	10,111	151	"	99,830	22,923	3,097	116	65	"	10,262	125,850	181
1907-8....	11,585	4,168	"	96,977	20,210	Nil.	174	51	"	15,753	127,187	225
1906-7....	10,791	1,371	"	128,160	38,148	"	661	57	"	12,162	159,308	718
1905-6....	19,077	3,971	"	126,871	33,543	1,042	568	79	"	23,048	161,456	647
1904-5 ..	49,422	17,283	"	108,553	33,833	745	279	213	"	66,715	143,131	492
1903-4....	57,741	23,428	1,475	133,594	25,855	5,456	361	31	31	82,644	164,905	423

SESSIONAL PAPER No. 21

APPENDIX No. 16.

HARBOUR COMMISSIONERS REPORTS OF MONTREAL, QUEBEC, TORONTO,
THREE RIVERS, NORTH SYDNEY, PICTOU AND BELLEVILLE.

REPORT OF OPERATIONS CARRIED OUT BY HARBOUR COMMISSIONERS OF MONTREAL, 1912.

HON. J. D. HAZEN,
Minister of Marine and Fisheries.

SIR,—In submitting their annual report for the year ending December 31, 1912, the commissioners desire, first of all, to express their appreciation for your kind and constant support and for the courteous co-operation of your Deputy Minister, Mr. Alexander Johnston, and the officers of your department.

In a big country like Canada, where nature deploys herself on a large scale, it is not surprising that they again have to record the biggest year's business in the history of the port, and also a record year of constructional achievement. To say that this is entirely due to the natural growth of the country would, perhaps, be too sweeping a statement, but it is a pleasurable reflection that the faith behind a great national port in its development has been justified and vindicated, not only by the constant use of every port facility but by the promise of a definite and permanent increase of national business through Canadian seaports, as fast as efficient facilities are created.

It is perhaps pardonable to re-state here that the development plan authorized by the Canadian Government in the progressive enlargement of her seaport facilities at Montreal, has met with the approval of the highest authorities on transportation.

To quote the words of Calvin Tomkins, commissioner of dock and ferries of the port of New York: 'I believe at the present time, while suffering from the disadvantage of ice obstruction in the winter, Montreal nevertheless affords the best example of modern seaport organization.'

In point of monthly volume of business, the port of Montreal takes its place as the second largest port in North America. Without imposing tonnage dues upon the ships, with a tariff of charges one-half of what existed twenty-five years ago, with a handling cost on all her through business reduced 50 per cent in six years, the port of Montreal though only at the inception of its development and far from realizing its ultimate economic possibilities, is able to pay out of a modest revenue all charges of maintenance, running expenses and the interest on every dollar invested in its development.

Canada's national port is, therefore, being developed by money borrowed from the national treasury and upon which the current rate of interest is being paid out of the revenues from the port's business.

Its boundaries have been extended, and the people of Canada now own, in fee simple, 16 miles of water front on either side of the river, untrammelled by a foot of vested interests.

Not alone has an attempt been made to meet the requirements of the great shipping interests in the development of port facilities, but the great railways of Canada have been afforded access to the ships and sheds; the cartage companies have been provided with accessible means of reaching the merchandise warehouse within the harbour limits; while plans have been laid for the creation of an industrial harbour

4 GEORGE V., A. 1914

that will afford to all great industries taking advantage of the facilities of rail and water access to their own establishments on an economic basis that will bring power to the prestige of the port.

There has, therefore, been achieved, with a measurable degree of success, a solution of one of the biggest problems which transportation presents, in the co-ordination of rail, river and road traffic, all meeting at a point of interchange, with possibilities of assembling cargo with economy and dispatch.

Applications for increased accommodation for ships are constantly presented to your commissioners, and little by little, the commercial fleets of old and new lines are swelling the tonnage of the port in an attempt to meet the trade demands of the country.

A brief reference to the work of each department will show that throughout the whole harbour organization there has existed the desire to produce efficient results and facilities for transacting business that will make for the attraction of new and greater industrial development in Canada's national port.

FIRST ARRIVAL FROM SEA.

The first vessel to arrive was the ss. *Zieten*, which steamed into port on the 1st May. The usual courtesy of presenting to the captain of the first arrival from sea of a small commemorative token, this year, went to Capt Franck.

DISTINGUISHED VISITORS.

During the year the following distinguished visitors inspected the port:—

His Royal Highness the Duke of Connaught, in May.

Sir Frank Wills, Lord Mayor of Bristol, and delegation to the inauguration of the Memorial Tower in Halifax.

British manufacturers.

Delegates to the XIIth Congress of Permanent International Association of Navigation Congresses.

NEW STEAMSHIPS AND STEAMSHIPS LINES.

The season of 1912 saw the inauguration by Furness-Withy & Co. of direct service between Montreal and Hull, and Montreal, Three Rivers and Fowey, and during the year, the following vessels were added to those already visiting the St. Lawrence:—

Donaldson Line—*Letitia*.

Thompson Line—*Cairndhu* and *Cairngowan*.

New Zealand Line—*Matatua*.

Sincennes-MacNaughton Co.—Two tugs built at Sorel and the *Aurelie G*.

There are under construction at the moment the following, which will be in commission at the beginning of 1913:—

Allan Line—*Alsatian* and *Calgarian*.

Cunard Line—*Andania* and *Alaunia*.

MARINE INSURANCE RATES.

The agitation to relieve ships and commerce trading in the St. Lawrence by a further reduction in Marine Insurance rates was prominently discussed throughout the country during the year.

Unfortunately, at the outset, the huge marine disaster to the White Star Company in the total loss of the ss. *Titanic*, on the New York-Liverpool service, did not offer favourable opportunities for reduction in rates.

It is to be hoped, however, that the effect of this unusual calamity will soon be dissipated and that some feasible plan will be discovered whereby the handicap of high marine rates will be lessened by the merits and experience of the Canadian route.

SESSIONAL PAPER No. 21

RETIREMENT OF THE HON. JAMES MCSHANE. HARBOUR MASTER.

The Hon. James McShane resigned his position as harbour master, which he had occupied for twelve years. In recognition of his public services the Government sanctioned this retirement on the basis of a reasonable life pension.

NEW BUILDINGS.

The first double-decked steel shed on the Victoria pier was completed and is now in use, this being the first of a series of five similar sheds to be erected on the new Victoria pier, which will add five additional ocean berths to the upper harbour.

Two sheds on the Tarte pier, in the eastern end of the city, were completed and have done service throughout the year, giving satisfaction to the lessees. Two further sheds of concrete on the same pier have been erected during the season and will be open to the business of the port on 1st May, 1913.

NEW OFFICE BUILDING.

A double story stone and brick office building was completed and occupied by the grain and traffic departments. The unused portions of the building, the size of which was planned to meet future requirements, have in the meantime been leased to the Grand Trunk and Canadian Northern Railways.

NEW ELEVATOR NO. 2.

Under construction since 27th July, 1910, by the J. S. Metcalf Co., Ltd., for the harbour commissioners, with an original capacity of 1,750,000 bushels, increased by an annex for storage purposes, bringing the present total storage capacity of the elevator to 2,622,000 bushels, was officially opened by the Minister of Marine and Fisheries, Hon. J. D. Hazen, on the 2nd October, and a complimentary luncheon, commemorative of this event, was tendered the prominent citizens on the upper story of shed No. 16.

In laying down the grain storage and handling capacity of the harbour, it was first thought wise to build several elevators at different points with a nominal maximum storage capacity of 1,000,000 bushels.

In view, however, of the investment already made in connection with harbour commissioners' elevator No. 1 and the conveyor system, by which the grain is brought to the ships at all the berths in the upper harbour, instead of forcing the ships to leave their berths and go to the elevator to get their grain, it was found preferable to consolidate, at the present time, the grain storage and handling capacity in a larger plant that could be connected with the general conveyor system.

There has, therefore, been constructed a grain elevator on the site where now stands the first unit of elevator No. 2, an absolutely fire-proof, modern grain elevator, with a present storage capacity of 2,622,000 bushels, and a possible ultimate capacity of 2,000,000 bushels more. The handling machinery of the total installation has been put in the first unit, so that, when completed, the port of Montreal will possess in its elevator No. 2 an elevator with a storage capacity of over four and one-half million bushels and a handling capacity, if need be, of 3,000,000 bushels per day, in and out.

The consolidation of four units in one will, it is confidently expected, ultimately be achieved at a saving in capital investment of nearly 40 per cent and a further saving in maintenance and operation of 60 per cent.

This elevator is provided with a battery of two marine legs erected on a pier, which provides two simultaneous discharging berths for the grain boats. This triples the discharging dispatch of the harbour commissioners' grain elevators for all water-borne grain.

4 GEORGE V., A. 1914

NEW PLANT.

The commissioners' construction and operating plant, consisting of dredges, derricks, tugs, scows, drill-boats, concrete mixers, locomotive cranes, floating cranes, electric hoists and general equipment, is known as one of the most extensive and up-to-date in the country.

During the season of 1912 important additions and improvements have been made to this plant.

Dredge No. 6.

A powerful spoon dredge was completed and put to work on the 6th September, 1912.

This vessel was designed and equipped in the harbour commissioners' shops, the hull and boiler, boom, electric lighting plant and pumps being the only portions built by contract.

The dimensions of the vessel are: Length, 104 feet; breadth, 39 feet; depth of hold, 11 feet.

The engines are horizontal, non-condensing, the two main engines having cylinders 16 inches by 18 inches, the maximum pull on the dredge cable being 180,000 pounds.

The dredge has a 7-yard bucket and is capable of dredging to 50 feet. The vessel commenced work immediately after completion at the shop on September 6, and was worked continuously, day and night, working to 50 feet depth in hard material until the close of the season, without interruption.

Floating Derrick No. 7.

This necessary addition to the plant has been under construction during the summer and will be completed before commencing next spring. The hull is of wood and was built at the commissioners' shipyard, and all the machinery has been designed and is being built at the commissioners' shops; the boiler and boom by contract.

The dimensions of the hull are as follows: Length, 88 feet; breadth, 31 feet; depth, 9 feet 8 inches; length of boom, 76 feet.

Double engines, horizontal 12 inches by 14 inches, capable of lifting 18 tons.

This floating derrick is, therefore, larger, more convenient and up-to-date than any of the commissioners' other derricks.

Light Draught Tug for Towing Timber.

Owing to the extension of the harbour limits and the large amount of timber towing required, a small tug has been recently completed and launched at the harbour shipyard.

The hull is of wood, mostly oak, of the following dimensions: Length, 50 feet; breadth, 11 feet; depth of hold, 7 feet; draught, 5 feet 6 inches.

A vertical, non-condensing, second-hand engine was placed in this tug and a vertical boiler built in the commissioners' shops. It is proposed to call this tug the *Passe-Partout*.

Scows.

Two large, much required, wooden flat scows were built and launched during the season, of the following dimensions: Length, 100 feet; breadth, 30 feet; depth, 9 feet.

Another flat scow was authorized and is now nearly completed.

SESSIONAL PAPER No. 21

Floating Compressed Air Plant.

A floating compressed air plant was assembled and placed on the hull of one of the old floating elevators, which had been condemned. The hull and boiler were suitable and a steam driven compressor 10 by 10 by 12 inches, capable of furnishing compressed air for four machines or spikers, was installed. This machine was put to work and proved very successful, both in point of economy and rapidity of work for crib construction and other construction and repair work where compressed air may be used to advantage.

For the land works and delivery of material one new locomotive crane was purchased, and a small construction locomotive, with 10 side-dump cars, second-hand, were acquired during the season. Nine second-hand standard flat cars were purchased to assist in the increasing requirements for handling of freight between different points on the wharfs.

NEW IMPORTANT BUSINESS.

Two years ago, the commissioners encouraged the direct all-water shipment of nitrate from Chili. This business used to be done exclusively through United States ports. This year the ss. *Milwaukee* brought to the port the largest single cargo in the port's history, viz., 12,261 tons of nitrate.

ELGIN BASIN SEWER.

It will be recalled that during 1911 an agreement was come to between the city and the commissioners whereby the main sewer discharging into Elgin basin was to be diverted by the city building a tunnel to connect this sewer with Craig street. The city has loyally carried out its part of the work and the tunnel is nearly completed.

LIFE SAVING.

Throughout the year, the different parts of the harbour have afforded protection to life by installing appliances such as buoys, poles, hooks and ladders at convenient places and these have been carefully and regularly inspected.

ROAD CLEANING AND SCAVENGING.

The same creditable efforts were put forth throughout the busy season, and notwithstanding the large amount of constructional work in progress, the roads and roadways were kept in a creditable state of repair and cleanliness.

PURCHASING DEPARTMENT.

The work of the purchasing department of the harbour has been well maintained and pains have been taken to carefully estimate the quality and price of all goods received.

HARBOUR YARD AND LOCOMOTIVE HOUSE.

As indicated in last year's report, a plot of land adjacent to the harbour, containing 76,000 square feet, with a frontage on Notre Dame street of 385 feet, was purchased. On this land have been erected concrete fire-proof offices, carpenter and blacksmith shops, locomotive housing and repair shop, coal and water towers, all of which are now occupied and in use. A large area for storage and extension still exists, which will, no doubt, prove useful in the future. A railway storage yard for cars has also been laid in this vicinity.

TRAFFIC DEPARTMENT.

Having charge of all rail movements over harbour terminals, the business of this branch of the service is fast becoming congested, owing to the large increase of the port's business. The work of this department consists in handling with harbour commissioners' own motive power all the railway traffic of all the railways coming to the port. This puts one neutral authority in charge of rail movements and assures to each railway and the public the same measure of efficiency.

This unity of control replaced the old joint leasing system where each railway had its own engines on the harbour tracks at the same time, causing expense, delay and confusion.

PURCHASE OF PROPERTIES ADJOINING HARBOUR.

Having regard for the future requirements of the port and with a view of affording extensive warehousing, railway yardage and shunting areas in the east end for the relief of railway congestion on the wharves, the commissioners have secured all the land frontings on Notre Dame street east, between the Dominion Cotton Co.'s Mills at Desery street to the Richelieu street subway, a frontage on Notre Dame street of 395 feet, which will be developed as a freight distributing centre.

NEW STEAMSHIP SHEDS.

One double-deck steel shed on the Victoria pier has been added to the ocean equipment of the central harbour, having rail communication on the water and shore sides.

Four single story concrete sheds, constructed so that a second story may be added when required, have been erected on the Tarte pier. These also have the railways on either side.

NIGHT NAVIGATION.

The lighting of the channel by the Marine and Fisheries Department has been much appreciated and made use of by the ships, which have found the channel service efficient.

CHANNEL DEPTHS.

The season just closed has been remarkable for the high average depth of water maintained throughout the season, being in marked contrast with the season of 1911, which was exceptionally dry.

Channel depths recorded during the season were as follows:—

	Feet.	Inches.
May..	35	5
June..	35	10
July..	32	0
August..	30	11
September..	30	8
October..	30	8
November..	32	2

GRAIN TRADE.

Unfortunately, the grain trade was carried on through the season not without many disadvantages, largely due to lack of storage and handling facilities.

This difficulty will be entirely absent in 1913, as unloading facilities for water-borne grain will be three times as great as they have ever before been. Where only one boat could hitherto discharge, three may now do so, while the storage capacity of commissioners' elevators will be treble what it formerly was.

SESSIONAL PAPER No. 21

FLOATING ELEVATORS.

These might have been used to relieve to a greater extent the grain congestion in the port had the ocean tonnage been available to carry the grain away.

PAYMASTER'S DEPARTMENT.

This department has had the heaviest work in its history and together with the time-keeping branch of the service has been kept abnormally busy. A system of time auditing by an independent accountant was introduced during the season as an additional check against mistakes and errors, which has proved the system to work satisfactorily.

FIRE PROTECTION.

As usual, the small local fire stations established on the piers have been regularly inspected and kept in readiness by the tug *St. Peter*. Several small fires occurred during the season but no serious damage resulted.

HIGH LEVEL RAILWAY.

The commissioners' high level railway now extends nearly as far east as Dominion park and will ultimately extend to the end of the island. This system replaces the old low level railway that was only operated for seven months and furnishes access to the harbour from the city by means of subways instead of level crossings, thus safeguarding the lives of those using the wharves. This high level railway service operated through the commissioners' traffic department in charge of a competent railway superintendent and assistants, furnishes Montreal with a railway terminal under neutral control and managed alike for the benefit of all railways and the public.

This will ultimately lead to all the steamship sheds being used as freight distributing warehouses during the winter; and will place in the heart of the city a first-class freight emporium accessible to all railways, merchants and cartage companies for the economical assembling and distribution of freight. This system will ultimately furnish to all industrial concerns established near the water front an all-the-year-round railway service with every railway doing business with the port, and supply every manufacturing centre, there established, with continuous railway service, throughout the year, with all railways. This is in addition to deep water communication provided by the piers.

It is, therefore, essential, that in the interests of the public and railways themselves, this harbour railway terminal should be controlled and operated by the harbour commissioners on a basis that will render discrimination of any sort impossible.

APPOINTMENTS.

During the year Capt. L. A. Demers was appointed Harbour Master to replace the Hon. James McShane, retired, and Mr. J. A. Masse assumed the duties of yard superintendent at the shops.

PUBLIC SERVICE COMMISSION.

At the request of the Canadian Government, the affairs of the harbour for the past five years were investigated by the newly appointed 'Public Service commissioners,' who were afforded every opportunity of examining the affairs of the Board.

4 GEORGE V., A. 1914

CHICAGO DRAINAGE CANAL.

Application by the city of Chicago to increase the flow of this canal from lake Michigan to the Mississippi river was resisted by the commission in the interests of navigation, Messrs. John Kennedy and David Seath appearing before the Secretary for War at Washington.

DEATHS.

The commissioners have, with regret, to record the deaths of Henry Bulmer, Esq., late president of the Board, and John S. Metcalf, Esq., constructing engineer of grain elevators.

NEW LIGHTHOUSE.

The commissioners have to thank the Marine Department for constructing a new lighthouse on St. Helen's island, to replace that removed from the Guard pier.

REMOVAL OF MOFFATT'S ISLAND.

One of the serious river problems has been the control of the St. Mary's current, between St. Helen's island and the city, which has always been a menace to navigation and interferes with the progress of pier construction in the harbour.

This condition is produced by many causes, one of which is the damming of the south shore channel by Moffatt's island and its approaches, diverting as it does the natural flow of the river belonging to the south channel over on to the Montreal side.

The proposed modification of these obstructions will not only relieve the rapid current referred to, but will also improve the southern part of the river and make its use for navigation purposes possible.

DRY DOCK.

On the 18th November, under the most auspicious circumstances, Field Marshal His Royal Highness the Duke of Connaught and Strathearn formally dedicated the new floating ship dock, built by Vickers, Limited, to the service of commerce and shipping, in the presence of 2,000 prominent citizens, shipping men and merchants.

The Vice Regal special came over the Canadian Pacific Railway direct to the dry dock site, from Ottawa, by way of the harbour terminals.

The guests arrived on two special trains, courteously furnished by the Grand Trunk and Canadian Northern Railways, and upon the steamer *St. Irenée*, generously provided by the Richelieu and Ontario Co.

His Royal Highness was presented with an illuminated address and graciously replied, unveiling a bronze tablet commemorative of the event.

The dock itself was built at Barrow-in-Furness and towed across the Atlantic by the two Dutch tugs *Roodzee* and *Zwarteze*, arriving safely in Montreal after a voyage of 64 days.

The site for the dock in preparation by the commissioners includes a protection basin 500 feet wide by 1,000 feet long, surrounded by an area of 30 acres created entirely out of river dredgings. This whole site is leased to the Canadian Vickers, Ltd., on terms of mutual advantage.

It is contemplated to create here an industrial development which will mean the investment of many millions of dollars.

NEW YEAR'S DAY TRIP.

On new year's day, 1912, the commissioners took advantage of the mild weather and open season to take the staff down the river on the ss. *Sir Hugh Allan*.

SESSIONAL PAPER No. 21

PERMANENT ASSOCIATION OF NAVIGATION CONGRESS.

This world-wide and distinguished organization of engineers interested in navigation problems met, at the invitation of the United States Government, in Philadelphia and were the guests of the United States from May 22 to June 12.

Taking advantage of the presence in North America of so many distinguished Engineers, in co-operation with the Canadian Department of Marine and Fisheries, the Commissioners extended an invitation to this important body to visit Canada and inspect her waterways and transportation systems. Nearly 150 took advantage of Canada's hospitality and were entertained from Port Arthur and Fort William to Quebec.

The commissioners entertained the guests in Montreal to a banquet and joined with your department in taking the party down the St. Lawrence on the *Sir Hugh Allan* and the *Lady Grey*.

NEW LOAN OF \$6,000,000.

To proceed without delay with the second stage of harbour improvements outlined under the general scheme, the commissioners have to thank the government for unanimously voting, under Act 3, George V, chap. 36, the capital sum of \$6,000,000.

STAFF.

Six years of co-operative work, unhampered by interference of any kind, has created a patriotic, zealous and competent staff upon whose shoulders rests the responsibility of whatever has been achieved, and to whose credit must largely go any success resulting from their efforts.

The commissioners wish to express deep appreciation of the staff's loyalty and patriotism in surrounding the solving of harbour problems with a spirit of national pride worthy of a great undertaking.

REVIEW 1907-1912.

Concisely reviewing the main features of harbour achievements during the last six years, the following brief summary may prove interesting:—

1907.

Concrete floors in winter, five sheds ready for steamships on opening of navigation.

Reorganization of staff.

Contract for 14 steel transit freight sheds, construction work stopped, claim of Messrs. Peter Lyall & Sons, contractors, due to delays, changes, increased cost, etc., \$725,000, examination of claim by commissioners, settlement for \$335,000.

Appraisal of assets.

Organization of traffic department.

Expeditious construction work on balance of harbour transit freight sheds.

Study of further development of port. Mr. R. C. H. Davison, M. Inst. C.E., London.

Harbour business and operation of facilities fair.

1908.

Study of European ports, President and Chief Engineer, January to April, 1908.

Report on Antwerp, Bristol, Cardiff, Glasgow, Havre, Liverpool, London, Manchester, Marseilles, Newcastle-on-Tyne and Montreal.

Preparation of plan of harbour extensions, Mr. F. W. Cowie, Chief Engineer.

Success of traffic department.

4 GEORGE V., A. 1914

Increase grain elevator business.

Completion of the 14 double-deck steel transit freight sheds. The last seven sheds completed by the contractors, Peter Lyall & Sons, without one dollar of extras.

1909.

100th Anniversary of steam navigation on the St. Lawrence.

Inauguration of the new White Star steamship service.

Inauguration of the new Canada Line steamship service.

Addition to the Thomson Line service; new harbour tugs.

Night navigation on ship channel.

Increase in grain business at harbour elevators.

Extension of harbour boundaries by Act of Parliament.

Seventy-five ton floating crane added to harbour equipment.

Canada Cement Co. wharf.

Plans of harbour extensions. Completion of plans, submission to board of consultative engineers, unanimous report approving of the scheme of harbour extensions, October, 1909.

Rapid growth of the country, immediate increase in transportation requirements.

Increase in port business.

1910.

Presentation of scheme of harbour extensions by commissioners to Minister of Marine and Fisheries; approved by Parliament and authorization of first stage for three years' work. Commencement of work May 1, 1910.

Construction work during the year:—

High level railway tracks, Victoria Pier to Molson's creek.

Twelve subway approaches to harbour.

Commencement of construction grain elevator No. 2.

Reconstruction of Victoria Pier.

Commencement of preparation of floating dry dock site at Molson's creek.

Inauguration of Canadian Northern Railway steamship line, Montreal to Bristol.

Addition to Donaldson line service, ss. *Saturna*.

Canadian Pacific Ry. New Zealand-Australia service.

Increase grain business, harbour commissioners' elevator.

On recommendation of Corn Exchange, purchase of Montreal Grain Elevating Co.'s fleet of floating elevators by harbour commissioners.

Addition to harbour commissioners' construction plant.

1911.

Serious problem on account of congested business owing to Canada's growth proceeding at a faster rate than facilities to take care of business.

Inauguration of new Cunard Line service, Montreal-London.

Commencement of service, Montreal-New Zealand-Australia by New Zealand steamship line.

Completion of St. Helen's island ferry wharf for city.

Additions to harbour property and facilities:—

New harbour yard and locomotive house.

New Wharf office building.

Ice-breaking tug *Sir Hugh Allan*.

Tug *John Young*, etc.

Season of extraordinary low water owing to extremely light rainfall during summer.

Vigorous prosecution of work of harbour extensions.

SESSIONAL PAPER No. 21

1912.

Act of Parliament approving of and authorizing second stage of harbour extensions for three years' work.

Completion of the addition to Racine pier for local river traffic.

Completion of the railway line to Racine pier.

Completion of the engine house and new harbour yard on harbour front, Hochelaga.

Inauguration of elevator No. 2.

Dedication of the *Duke of Connaught* floating dock.

Opening of new harbour shed No. 16.

Completion of two permanent transit sheds and the commencement of two additional ones at the Tarte pier.

Additions to harbour commissioners' construction and operating plant.

Ample depth of water in the ship channel and harbour basins.

Construction work heaviest on record.

Port business and operation of harbour facilities increasing rapidly.

HON. L. P. BRODEUR.

The commissioners feel that they cannot close this, their last annual report, without a reference to the Hon. Louis Philippe Brodeur, who was Minister of Marine and Fisheries during the first five years of their holding office and by whom they were appointed in 1907. During this whole period the many problems connected with the St. Lawrence route and the port of Montreal brought under discussion, were treated in a spirit of marked broadmindedness, and his earnest desire for the development of the port in the interests of the business of the country was never lost sight of.

The commissioners desire to express their personal pleasure at having had the privilege of serving him during those years.

GENERAL.

Though something has been done to equip the port of Montreal in a manner befitting its importance as the head of ocean navigation, it must be remembered that many problems of great import yet remain to be worked out. In carrying on this work it will be wise to maintain the authority of the port executive in a manner which will permit of all interests using its facilities receiving equal and fair treatment. The administrative staff must understand that upon loyal service and merit alone depend their positions and advancement, and that no outside authority can appoint, promote or dismiss them.

It must not be lost sight of that handicapped by a short season, that only provides 21 working months in three years, nothing must be permitted to delay the work which already fails to create fast enough the facilities required by Canada's business needs. Time, therefore, plays a most important part in advancing the port's efficiency.

The harmonious and comprehensive scheme of port development that took three years of careful study to prepare, and which, before being adopted by the commissioners, was submitted to an independent board of distinguished engineers, is now well on its way. When completed it will provide Canada with a national port containing ten miles of first class harbour accommodation, combining close co-ordination of railway, river and roadway accessibility, with ample warehousing areas, thus ensuring the best obtainable transportation results upon a moderate capital investment.

APPRECIATION.

To the merchants, board of trade, chambre de commerce, corn exchange, cartage, shipping and railway companies and to the longshoremen, the commissioners desire

4 GEORGE V., A. 1914

again to place on record their deep appreciation and to acknowledge their valuable advice and assistance in connection with the port's development.

PRESS.

To the members of the press who have done so much to make known the advantages of the port, the commissioners desire to record their special appreciation.

CONCLUSION.

The present commission is resigning after six years of happy executive work into which has been loyally put the best they had to give. They express the conviction that their successors will receive from the trained and efficient staff the loyal support that will enable them to do honour to their positions.

They beg further to again emphasize their appreciation of having found in the person of the Hon. J. D. Hazen a just, broadminded and enthusiastic Minister of Marine and Fisheries, in whose hands the port's future will undoubtedly be safeguarded.

Respectfully submitted,

GEORGE W. STEPHENS,

President.

L. E. GEOFFRION,

C. C. BALLANTYNE,

Commissioners.

SESSIONAL PAPER No. 21

REPORT OF SECRETARY-TREASURER.

ALEX. JOHNSTON, Esq.,
Deputy Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—I have the honour, by direction of the commissioners, to forward herewith, for the information of the Honourable the Minister of Marine and Fisheries, summarized statement of operations of the corporation for the year ended 31st December, 1912:—

Revenue Account.

The receipts on revenue account were \$1,049,311.50, an increase over the previous year of \$137,056.27.

The disbursements were \$1,108,804.95, of which \$608,280.53 was for interest, an increase of \$104,300.95, and for administration, operation, maintenance, etc., \$500,524.42, an increase of \$120,433.71, a total increase of \$224,734.66.

Capital Account.

There was received on loan from the Dominion Government under the Act 9-10, Edward VII., Chap. 46 (being the balance of that loan of \$6,000,000), \$2,460,000. Under the Act 2, George V., Chap. 36, \$515,000. Total, \$2,975,000.

There still remains available of the last mentioned loan of \$6,000,000, the sum of \$5,485,000, of which \$600,000 is to retire debentures held by the public and the balance of \$4,885,000 to carry out further improvements.

The expenditure on capital account was \$2,988,253.22, a larger amount than in any previous year.

The debenture debt of the corporation on the 31st December, 1912, was \$19,582,000, of which \$1,872,000 is to the public, and \$17,710,000 to the Dominion Government, upon which the average rate of interest is 3.34 per cent.

I have the honour to be, sir,
Your obedient servant,

DAVID SEATH,
Secretary.

SUMMARIZED STATEMENT of Operations for the year, 1912.

Revenue and Balance.	Revenue.	Capital.	Disbursements and Balance.	Revenue.	Capital.
	\$ cts.	\$ cts.		\$ cts.	\$ cts.
<i>Receipts, 1912.</i>					
Collector of Customs—					
Wharfage dues on imports.....	\$260,154 23		Buoys and beacons.....	315 74	448 29
Wharfage dues on exports.....	111,779 04		Refund wharfage outwards.....	531 97	1,020 70
			Annuity.....	600 00	1,547 82
			Refund wharfage inwards.....	1,223 03	1,635 94
			New harbour yard.....	1,780 00	2,119 62
Switching cars.....	371,933 27		Harbour survey.....	2,940 70	2,773 85
Local wharfages, rental of space, &c.....	224,119 62		Miscellaneous expenses, printing, stationery, travelling, legal and notarial, &c.....	5,918 65	3,938 33
Grain elevator No. 1, elevating charges, &c.....	139,239 68		Harbour lighting.....	9,555 89	4,609 61
Rental of harbour sheds.....	110,251 04		Salaries, commissioners and staff.....	55,878 36	8,207 00
Rental of harbour tracks and properties.....	101,499 97		Harbour yard building.....	55,351 52	9,192 42
Elevating grain, floaters.....	48,002 62		Harbour repairs, harbour tracks, &c.....	261,798 35	
Elevator No. 2, elevating charges, &c.....	42,540 19		Interest.....	457,041 88	
Floating crane.....	6,715 11		Harbour Sheds—		
	5,010 00		Interest on cost.....	\$100,228 25	
			Insurance, maintenance, &c.....	17,192 16	
	1,049,311 50			117,420 41	
Dominion Government—					
Under Act 9-10, Edward VII, Chap. 40.....	\$2,460,000		Grain Elevator No. 1—		
Under Act 2, George V, Chap. 36....	515,000		Interest on building and conveyors.....	47,095 21	
			Wages, power, &c.....	65,644 27	
Receipts of capital account.....		2,975,000 00		112,739 48	
Receipts of revenue account.....		1,049,311 50	Grain Elevator No. 2—		
			Wages, power, &c.....		
			Floating Crane—		
			Interest on cost.....	3,915 19	
			Wages, &c.....	4,866 44	
		4,024,311 50		16,927 34	
Sundry receipts—				8,781 63	
Security deposits from sundry contractors.....	\$7,172 18		Dominion Coal Co.'s wharf.....		
Plant sold.....	500 00		Harbour of Montreal.....		
			Latrines and drains.....		
			St. Helen's Island wharf.....		
		7,672 18	Windmill Point wharf filling.....		
			Light draft tug.....		
		4,031,983 68	Racine pier, pile wharf.....		
Balance from 1911		399,876 70	Electric wiring and conduits.....		
Overdraft at Bank of Montreal.....		114,170 20	Elevator No. 1, marine tower.....		
			Harbour enlargement paving.....		

SESSIONAL PAPER No. 21

Derrick No. 7.....	20,870 89
Wharf office building.....	11,318 71
Dredge No. 6	24,997 25
Flat scows.....	25,792 58
Harbour railway and sidings.....	38,195 16
Grain elevator No. 2, Part 1.....	54,211 90
High level railway.....	89,618 23
High level wharf, section 25 to 30.....	104,061 86
Victoria pier and market basin	148,371 52
Properties, Hochelaga ward.....	150,207 69
Dredging and filling.....	174,494 93
Permanent sheds, Tarte pier.....	206,757 49
Permanent shed, high level, Victoria pier.....	230,698 00
Improvements, eastern section.....	404,595 81
Grain elevator No. 2, part 2.....	1,268,567 12
Disbursements on capital account.....	2,988,253 22
Disbursements on revenue account	1,108,804 95
Total disbursements.....	4,097,058 17
Less, payable at December 31, 1912—	
Interest account.....	\$270,978 91
Coupons outstanding.....	777 30
Outstanding accounts.....	216,092 35
	<u>487,848 79</u>
Less, outstanding December 31, 1911.	445,216 71
Security deposits returned	42,632 08
	<u>4,054,426 00</u>
	25,099 00
Balance at December 31, 1911—	<u>4,079,525 09</u>
Cash on hand.....	\$1,808 86
Bank of Montreal coupon	
account.....	260 00
	<u>2,078 86</u>
Discount on debentures H. & J. ..	9,090 63
Sundry accounts receivable.....	332,669 14
Value of materials in stock.....	122,666 86
	<u>466,505 49</u>
	4,546,030 58

Verified :

DAVID SEATH,

Secretary Treasurer.

RIDDELL, STEAD, GRAHAM & HUTCHISON, C.A.,

Auditors.

4 GEORGE V., A. 1914

REPORT OF THE HARBOUR MASTER OF THE PORT OF MONTREAL FOR THE YEAR 1912.

OFFICE OF THE HARBOUR MASTER,

MONTREAL, February 10, 1913.

DAVID SEATH, Esq.,

Secretary, Harbour Commissioners of Montreal.

SIR,—I beg to submit, for the information of the commissioners, annual report with respect to ocean, coasting and inland vessels for the navigation season of 1912.

The ferry steamer *Longueuil*, of the Richelieu and Ontario Navigation Co., was the first to ply the waters of the port on the 23rd April, ending her season's work on the 21st of December. The first arrival from sea was on the 30th April, when the ss. *Zieten* moored to her berth.

A glance at the accompanying statements will show that 409 trans-Atlantic vessels arrived, with a tonnage of 1,775,487 tons, which is an increase of eight (8) vessels, with increase in tonnage of 79,874 tons over the preceding year.

Arrivals from lower St. Lawrence and Maritime ports were 327 vessels, with a tonnage of 628,437 tons, showing a decrease over last year of 34 vessels, and a corresponding decrease in tonnage amounting to 14,202 tons.

A good showing was made by inland vessels, 12,586 of which called, with a total tonnage of 4,649,767 tons, an increase of 916 vessels, and tonnage of 374,748 tons, over and above last year's traffic.

The statements attached, showing the movements of vessels in the port of Montreal for the last ten years, are as follows:—

1. Showing the classification of trans-Atlantic vessels that arrived in port.
2. Showing the number and tonnage of all vessels.
3. Showing the classification of vessels from the lower St. Lawrence and Maritime Provinces.
4. Showing the nationalities and tonnage of sea-going vessels that frequented the port during the season 1912.
5. Finally, a statement showing the dates of opening and closing of navigation, the first arrival and the last departure for sea, also the greatest number of vessels in port at one time for the past ten years.

On account of the rapid development of the port, and fast increasing traffic, it was thought necessary to recommend the appointment of another assistant, which was accordingly done.

I am pleased to say that the system of supervision which was exercised since last June, the date of my appointment, up to the end of the season, was well received and appreciated by the shipping interests.

I have the honour to be, sir,

Your obedient servant,

L. A. DEMERS, F.R.A.S.,

Harbour Master.

SESSIONAL PAPER No. 21

STATEMENT showing the Classification of Transatlantic Vessels that arrived in Port during the past Ten Years.

Year.	Steam- ship No.	Tonnage.	Barques No.	Ton- nage.	Ships & Brigs No.	Ton- nage.	Schoon- ers No.	Ton- nage.	Grand Total Vessels.	Tonnage.
1903	476	1,414,595	2	1,388	1	1,543	5	1,030	484	1,418,156
1904	408	1,267,088	3	1,144	1	318	5	2,090	417	1,270,640
1905	422	1,357,517	3	2,324	.....	.....	17	14,988	442	1,354,829
1906	420	1,372,879	3	1,872	.....	.....	16	6,084	439	1,380,833
1907	381	1,339,014	.....	.....	.....	.....	.....	.....	381	1,339,914
1908	364	1,315,688	.....	.....	.....	.....	.....	.....	364	1,315,688
1909	371	1,436,963	.....	.....	.....	.....	.....	.....	371	1,436,963
1910	410	1,656,794	.....	.....	1	1,620	.....	.....	411	2,638,414
1911	401	1,695,613	.....	.....	.....	.....	.....	.....	401	1,695,613
1912	409	1,775,487	.....	.....	.....	.....	.....	.....	409	1,775,487

COMBINED STATEMENT showing the number of all Vessels and Tonnage that arrived in Port during the past Ten Years.

Year.	Trans-Atlantic.		Maritime Provinces.		Inland.		Grand Total.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
1903	484	1,418,156	318	472,748	15,358	2,415,791	15,140	4,306,695
1904	417	1,270,640	379	586,057	10,063	2,354,975	10,859	4,211,672
1905	442	1,354,829	391	585,227	11,112	2,788,551	11,945	4,725,607
1906	439	1,380,835	381	592,388	12,557	3,095,174	13,377	5,068,395
1907	381	1,339,014	361	586,972	14,420	3,620,950	15,161	5,546,936
1908	364	1,315,688	375	642,916	12,434	3,589,124	13,173	5,548,028
1909	371	1,436,963	299	474,450	10,991	3,146,194	11,661	5,057,907
1910	411	1,658,414	336	574,808	13,636	4,327,799	14,383	6,561,021
1911	401	1,695,613	361	642,639	11,670	4,275,019	12,432	6,613,271
1912	409	1,775,487	327	628,437	12,586	4,649,767	13,322	7,053,691

STATEMENT showing the Classification of Vessels that arrived in Port, for the last Ten Years, from the Lower St. Lawrence and Maritime Provinces.

Year.	Steamships.		Schooners		Grand Total.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1903	303	468,100	15	4,648	318	472,748
1904	366	582,819	13	2,238	379	586,057
1905	364	580,485	26	4,116	391	585,127
1906	367	588,980	14	3,408	381	592,388
1907	343	579,930	18	7,042	361	586,972
1908	350	640,244	25	2,672	375	642,916
1909	273	470,936	26	3,514	299	474,450
1910	306	572,022	30	2,786	336	574,808
1911	330	639,752	31	2,887	361	642,639
1912	292	625,099	35	3,338	327	628,457

4 GEORGE V., A. 1914

STATEMENT showing the Nationalities and Tonnage of sea-going Vessels that arrived in Port during the season of 1912, navigated by 63,972 sailors.

NATIONALITY.	Number of Vessels.	Tonnage.
British.....	660	2,215,602
Norwegian.	53	116,281
German.....	14	50,779
Dutch.....	3	9,068
Belgian.....		
American		
French		
Austrian.....	3	8,102
Danish.....	3	4,092
Total...	736	2,403,924

Of the above, 701 were of iron or steel with a tonnage of 2,400,586 tons, and 35 were built of wood, with a tonnage of 3,338 tons.

STATEMENT showing the dates of the Opening and Closing of Navigation, the First Arrival and the Last Departure for sea; also the Greatest Number of Vessels at one time, during the past Ten Years.

Years.	Opening of Navigation.	Closing of Navigation.	First Arrival from Sea.	Last Departure for Sea.	Greatest Number of Vessels in Port at one Time.			
					Sea-going.		Inland.	
					No.	Date.	No.	Date.
1903	April 2...	Dec. 10....	April 26....	Nov. 28...	33	June 8..	223	June 26
1904	" 25....	" 9...	May 4....	" 27....	23	Sept. 10..	180	July 13
1905	" 19....	" 12....	" 2....	" 30....	27	Oct. 4..	175	June 19
1906.....	" 20....	" 2....	April 28 ...	Dec. 2....	26	May 28..	124	July 8
1907.....	" 23....	" 15....	May 2....	Nov. 29....	29	" 24..	103	July 8
1908	" 22....	" 10....	April 30....	" 26....	24	June 21..	104	June 30
1909.....	" 16....	" 27....	" 23....	" 28....	22	Nov. 9..	107	Aug. 31
1910.	" 1....	" 7....	" 11....	Dec. 1....	25	May 18..	122	Sept. 18
1911	" 23....	" 29....	" 26...	" 3....	24	Aug. 18..	85	June 5
1912.....	" 23....	" 21....	" 30....	" 3....	22	July 31..	86	Aug. 21

SESSIONAL PAPER No. 21

REPORT OF THE SUPERINTENDENT OF RAILWAY TERMINALS FOR THE YEAR 1912.

DAVID SEATH, ESQ.,
Secretary.

SIR,—I beg to submit, for the information of the commissioners, the following as a report of the operations of the traffic department during the year 1912.

WINTER OPERATIONS.

The facilities offered for handling carload freight in the harbour are attracting more business year by year, and during the winter months these advantages are being made use of by the railway companies to relieve their terminals and to secure an efficient service. This year, following the example of the Canadian Pacific Railway, the Grand Trunk Railway handled their steamship freight from winter ports in the harbour, shed No. 11 being used for this purpose.

What with the local traffic on the high level wharves (the low level being covered with ice after the river settled to its winter level), the transfer of cars between the railway terminals at the east and west ends of the city, the winter's traffic has developed from a few cars a week to proportions justifying the operation of railway service in the port the whole year.

The increase in car handling during the closed season, January 1 to April 30, this year, was more than 35 per cent above the same period in 1911.

SEASON OF NAVIGATION—CAR HANDLING.

May 1 saw the beginning of the railway traffic for export. Throughout the season of navigation car receipts kept well above former years, the total increase in car handling over the previous year being 17 per cent. This increase is made up principally of local traffic, as the interchange traffic alone shows an increase of 34 per cent, while the car handling at the sheds does not show so great a difference in the two years.

The extension of the high level tracks eastward, giving access to the dry dock at section 57 and connecting with the Montreal Locomotive Works' tracks at section 62, while adding somewhat to the car receipts increases considerably the track mileage operated by this department and consequently brings up the operating expenses.

IMPROVEMENTS.

To meet the requirements occasioned by the increased volume of traffic, as well as the greater track mileage in operation, the commissioners purchased two more six-wheel switching locomotives of the same type as those purchased in 1911.

These locomotives were put in service during the winter months to replace others undergoing repairs and were worked the whole season without the necessity of any long lay-up for repairs.

It may therefore be said that they gave entire satisfaction.

The office building at section 15 was completed in the early spring, and the quarters allotted to the traffic department were taken possession of, thereby vacating the unsatisfactory and unsightly shanties formerly occupied.

The engine-house at section 42 was first occupied on June 6. This building provides storage for the locomotives, a shop for repairs, which is being equipped, and has in connection with it a coal handling plant and other appurtenances needed in a roundhouse.

The running repairs of the seven locomotives were carried out as required in the shop and the general overhauling, done in the past in outside works, will be taken

4 GEORGE V., A. 1914

care of next year by our staff. The necessity of this building has been made more apparent each year, and its completion was the most important improvement of 1912, as far as this department is concerned.

The eastern end of the harbour, by the improvements carried out this year, has made great progress in railway traffic, and to meet the demands there one engine had to be kept in constant service.

On Tarte pier, sheds Nos. 44 and 45 were completed at the beginning of the season, tracks being provided for handling freight direct from car to shed and vice versa. A track was also put in on the water front and was used to great advantage in handling freight direct from car to ship, being particularly useful in handling heavy package shipments, such as automobiles, of which a great number were unloaded.

The Montreal tramways' tracks at Lasalle Ave., section 47, were connected with the harbour tracks, and it is expected that next year a large amount of traffic will be derived from this connection.

At section 54, a siding was laid down on the dry dock pier and was used to a great extent for rail shipments in connection with this work. At the inauguration of the dry dock three passenger trains were run to this site from the west end to convey the guests to the ceremony.

At section 62, the tracks of the Montreal Locomotive Works were coupled up with our main line, and on June 26 a service of interchanges of cars was instituted. A fair amount of business, subject to great increase in the near future, was obtained from this source, made up principally of locomotives erected at that plant.

At sections 19 to 22 a re-arrangement of existing tracks and additional trackage to handle grain shipments to elevator No. 2 was partly completed. The capacity of the elevator was in no way taxed this year owing to being completed late in the season, and from July 8, the first day that any car was placed in the elevator, all grain shipments were promptly handled.

This arrangement of tracks was put to good use, in the absence of grain traffic, for sorting and storing cars for the west end, permitting of cars being properly marshalled before being brought to the more congested part of the wharf where distribution would have been more difficult.

GENERAL NOTES.

From the foregoing it will be seen that 1912 was a banner year for the traffic department. Even under normal conditions the handling of traffic is made a difficult proposition by the limited track facilities, and with every increase in car receipts the operations become more intricate as there is no opportunity to add tracks to meet the augmented traffic.

It is therefore gratifying to record that operations were successfully carried out during the year and that no serious delays or accidents were experienced that interfered in any way with import or export business.

In addition to the ordinary traffic, work trains were operated for construction work, at a considerable saving of time and money to the new works.

The traffic department made numerous demands upon the administrative, engineering and other departments, and the attention received was a factor of no mean importance in making the year a successful one.

Yours very truly,

J. VAUGHAN,

Superintendent of Railway Terminals.

SESSIONAL PAPER No. 21

REPORT ON THE WORKS FOR MAINTENANCE AND OPERATION OF FACILITIES OF THE
HARBOUR OF MONTREAL, FOR THE YEAR 1912.

FEBRUARY 15, 1913.

DAVID SEATH, Esq.,

Secretary, Harbour Commissioners of Montreal.

SIR,—I have the honour, by direction, to present the following annual report on the operations for the improvements and maintenance of Montreal harbour during the year ended 31st December, 1912.

The assembling at Philadelphia, U.S.A., under the auspices of the 'Permanent International Association of Navigation Congresses,' of many of the leading ship builders, waterway engineers and maritime experts of the world, in May, 1912, and their proposed visit to Canada, suggested the publication in the last annual report of a special chapter on the development of the port of Montreal.

In that report illustrations were given showing Montreal harbour in its undeveloped stage, in 1830, and also the progress of extensions and improvements up to the year 1912.

In the present annual report two notable accomplishments are recorded, viz.—The large floating dock *Duke of Connaught* and the modern grain elevator No. 2, both of which were inaugurated for business before the closing of the season of navigation of 1912.

The undersigned had the honour of attending the 'Twelfth International Congress of Navigation' which assembled at Philadelphia on May 22, 1912, as one of the Canadian Government delegates.

The 'International Association of Navigation Congresses' has existed since 1885, when the first congress was held in Brussels, and it became a permanent institution in 1898.

Congresses have been held in Belgium, Austria, England, France, Holland, Germany, Italy and Russia. The association has about 2,000 permanent members. It is encouraged by 47 different countries.

The object of the association is to promote the progress of inland and maritime navigation.

At the meetings, important questions are discussed and the opinions obtained on certain important subjects, of the engineers and experts throughout the world who have had special experience on those particular questions, with a view of arriving at a decision as to the most reliable methods to be generally followed.

In addition to these discussions, visits to important engineering works are made so that foreign members may better understand the progress and development of the country in which the meeting is held.

The executive office of the association is located at Brussels and the permanent engineering and clerical force is provided by the Belgian Government.

Representatives of 19 countries, to the number of 124, took part in the Canadian excursion, being under the special charge of the Canadian Government as represented by Lt. Col. William P. Anderson, chief engineer, Marine and Fisheries Department, and Professor C. H. McLeod, secretary, Canadian Society of Civil Engineers.

On June 17 and 18, the representatives were entertained by the Montreal harbour commissioners, including an inspection trip of the harbour, a banquet on the evening of the 17th and an excursion for a number of the representatives, from Montreal to Quebec, on the harbour commissioners' steamer *Sir Hugh Allan*.

Although only a portion of the representatives of the 'Association of Navigation Congresses' visited Canada, a sufficiently representative group of eminent engineers

4 GEORGE V., A. 1914

accepted the Canadian invitation and could not fail to carry away to their various foreign homes, an impression which will be to the great benefit of the commercial and industrial development of Canada.

It is to be hoped that the Canadian Government and the important transportation interests will, at an early date, make such representations as will result in the Association holding a meeting in Canada.

HARBOUR IMPROVEMENTS.

The commissioners and their construction organization have the following accomplishments to their credit for the season of 1912:—

An Act of Parliament approving of and authorizing the second stage of harbour extensions, to comprise three years' further work.

A successful construction season, no serious accidents in the port, satisfactory labour conditions and the best season on record with regard to the operations of harbour facilities.

A new pier, adjoining the Racine Pier, was completed, specially designed for local river traffic.

The railway line was completed along the river front from Molson's creek to Racine pier.

A ferry wharf was completed at St. Helen's island for the use of the city of Montreal.

A new engine house, harbour yard and shops were completed on the harbour front, Hochelaga.

Two permanent transit sheds were completed and opened for traffic on the Tarte pier, and two additional ones were commenced.

Important additions and improvements were made to the construction and operating plant.

Navigation in the harbour and 'ship channel' was greatly facilitated, owing to there being an ample depth of water throughout the summer.

Grain elevator No. 2, commenced in 1910, was inaugurated and took its place towards relieving the congested grain traffic in Montreal harbour.

A new harbour shed, No. 16, was completed and opened for business on the new high level Victoria pier.

The *Duke of Connaught* floating dock was dedicated to shipping and industry by Field Marshal, His Royal Highness, the Duke of Connaught and Strathearn, K.G., on November 18.

ENGINEERING DEPARTMENT.

The engineering department requires a responsible officer, always ready when required or in an emergency, to take charge of the many questions in connection with the general maintenance of the harbour, its channels, navigation and the varying physical conditions, also the wharfs, sheds, railways, roads, lighting, terminal and freight handling facilities, reports, information and records. The operation of grain elevators, floating elevators and cranes; the keeping of the wharfs in order and traffic going; the information, advice and consultation as to the best ways and means of carrying on St. Lawrence traffic, are also matters of every day work. Besides this, as is sometimes overlooked, there is the actual planning and direction of the construction work which, in Montreal harbour, is done almost altogether departmentally and not by contract.

The physical conditions of the mighty St. Lawrence and the problems in connection with its care are responsibilities not easily passed over. Mr. Kennedy, for many years the chief engineer of the harbour and still its veteran honoured authority, once remarked that it was easy to coax the St. Lawrence, but not so safe to try to force it. The harbour extensions must necessarily upset nature to some extent, and the diffi-

SESSIONAL PAPER No. 21

culties to be encountered constructing works in the mighty river to withstand currents, ice, changes in temperature of some one hundred and fifty degrees, as well as floods, are such as to require in the staff engineers having above all things, fearlessness of responsibility.

The construction work is almost universally carried on departmentally. The steady growth of the harbour and the constant yearly effort to keep pace with the commerce have resulted in the commissioners having a splendid plant for the peculiar constructions required. Dredging plant, tugs, derricks and a shop for repairs, are all kept up to date, and the organization for construction is capable of doing the harbour dredging and placing the excavated material in the works, of building crib-work and concrete quay walls of a height from the foundations to the cope of 60 feet, of constructing railways, walls, sheds, culverts and, in fact, almost every phase of port construction.

Weekly, monthly and annual reports are furnished to the commissioners, giving full explanation of all details and of costs, quantities and comparative figures.

The staff organized to design, supervise and carry on the works of such large magnitude and to account, record and take care of the details of expenditure is one of which success is its best recommendation.

Every effort was made throughout the whole of the works of construction and operations, by order of the commissioners, to spare no expense or trouble for the safety and care of the public and to interrupt the traffic to the least possible extent.

Frequently, jobs had to be delayed or put off, much to the disadvantage of progress, in order to convenience traffic conditions. This would not have been possible under contract conditions and was to the advantage of the public.

The engineering department is organized so as to have charge of the varied and important branches, as follows:—

Harbours extensions.. . . .	Part I
Maintenance.. . . .	Part II
Operation.. . . .	Part III

HARBOUR EXTENSIONS.—PART I.

Item 2.—Elevator No. 2.

The work of construction of the shore wharf and marine tower jetty, in connection with elevator No. 2, which is being carried out departmentally, was vigourously carried on during the year and successfully completed.

The shore wharf, of a length of 590 feet, is of standard concrete superstructure and fitted with mooring bollards and with rings for river craft. The back filling of the wharf was deposited by carts from city excavations, free of cost to the commissioners.

The marine tower jetty, which was in progress in 1911, had the concrete superstructure completed in 1912 and the foundations for the overhead grain conveyors put in. The wharf was filled with dredgings from the harbour, by the commissioners' floating derricks.

The construction of the grain elevator building, with its storage extension, which were in progress of construction in 1911, was completed ready for the handling of grain by cars on July 1, and the first consignment by cars was received on the 8th.

On November 8 the marine leg was ready for water-borne grain and the first cargo was handled.

A complete report of the grain handled will be found in the section on operation.

The following report by the John S. Metcalf Co., Limited, Montreal, elevator engineers for the commissioners, gives a full description of the structure and installation of the new harbour commissioners' grain elevator No. 2.

4 GEORGE V., A. 1914

New Grain Elevator for the Harbour Commissioners of Montreal.

The marine traffic of the port of Montreal is second only to that of the port of New York among all the ocean ports of North America. An important portion of the export traffic from Montreal is grain, which is for the greater part, wheat from the western provinces of Canada.

Prior to 1910 the export grain handling equipment in Montreal harbour consisted of a 1,000,000-bushel steel elevator, owned and operated by the harbour commissioners, adapted for unloading lake and canal vessels but not designed for extensive railway car traffic; a 1,000,000-bushel steel elevator owned and operated by the Montreal Warehousing Company (as corporation subsidiary to the Grand Trunk railway), equipped for the unloading of both railroad cars and inland vessels; two obsolete wooden elevators, owned by the Canadian Pacific railway and since torn down; and a small fleet of floating transfer elevators of varying age and efficiency.

In the early part of 1910 the harbour commissioners of Montreal determined on the immediate construction of a new grain elevator of the highest class to provide (a) a rapid and efficient plant for the unloading of those railway cars for which the Grand Trunk Elevator was not available; (b) extensive additional capacity for quick unloading of inland vessels which were often being delayed for days in the harbour waiting to be unloaded; (c) sufficient additional storage capacity so that merchants could hold grain at the exporting point when it became advantageous to do so, and to eliminate the necessity for direct and almost immediate transfer of inland cargoes to ocean vessels; (d) facilities for shipping grain from the new elevator, not only to the present vessel berths but to others under course of planning.

The harbour commissioners retained John S. Metcalf Co., Limited, as their constructing engineers for the new elevators. This company were the designers and builders of the Grand Trunk elevator in Montreal harbour and of the great export grain conveyor system belonging to the commissioners; so that they were familiar with the development of the port and the details of the problems to be solved. The instructions were to provide the best in structure, equipment and efficiency. The commissioners were resolved that Montreal's export traffic in grain should not suffer through lack of thorough facilities.

In the summer of 1912 the elevator and a portion of the shipping conveyors were ready for the handling of car grain; and the marine unloading equipment went into operation on October 1 of this year. Even, though the capacity of the new elevator was to be, 1,772,000 bushels, it was found in 1911 that the storage room of the Port would still be inadequate; and as the elevator was to have machinery equipment suitable for taking care of several millions of bushels of storage capacity, the commissioners ordered the capacity of the elevator to be increased by 850,000 bushels, making the total capacity of the new work 2,622,000 bushels. The storage addition will be ready for grain this fall.

A description of the important features of the work follows:—

Dimensions.—The elevator, including the storage addition, is 456 feet 8 inches long by 100 feet wide, and 220 feet high on the tops of the leg towers.

Foundations.—The elevator is built on filled ground and in part is above old wooden wharfs long since buried by the gradual making of land along the river bank. The range of water level in the St. Lawrence at this point is approximately 25 feet. The rail elevation is at high water level; but to provide for deep receiving pits, it was necessary to carry a considerable portion of the excavation for the main elevator down to a depth of about 20 feet. Accordingly the entire area of the main building was excavated to low water level and 7,730 wooden piles were driven. The driving was found to be exceedingly difficult, owing to the boulders, old cribs, etc., beneath the site. Two large drivers with No. 1 Warrington steam hammers were employed. On top of the piles, a reinforced concrete slab 3 feet 6 inches thick was laid, extend-

SESSIONAL PAPER No. 21

ing over the entire foundation area. An idea of the foundation problem may be gained when it is known that loads as high as 1,270 tons had to be carried on some of the columns.

Concrete piers and walls were built on top of the foundation slabs and carried up to the track level. The track girders are of reinforced concrete, except over the receiving pits, where they are of steel. Boot tanks and track hoppers are of steel.

The foundations of the 850,000 bushels storage addition were differently treated. As there were to be no elevator legs, and consequently no boot tanks, in this portion of the elevator, the deep excavation necessary for the main elevator was not required. Consequently, 1,535 reinforced concrete piles were used. These were of the "Simplex Moulded Inserted" type, with their tops about four feet below base of rail. Above them the foundation concrete was placed.

First Story.—Four railroad tracks extend through the entire elevator. The bin openings are 22 feet 6 inches above the tracks. The columns supporting the bins are of reinforced concrete, about 24 feet centres, in general, each way. Some of these columns are as large as $6\frac{1}{2}$ by $5\frac{1}{2}$ feet. They are surmounted by the heavy concrete girders supporting the bins. These main girders are 5 feet deep and $6\frac{1}{2}$ feet wide. The first floor is of concrete except at hopper and grain openings, where steel gratings are employed. Curtain walls are of concrete, with a large area of fire-proof windows. The track openings are closed by rolling steel doors.

Bins.—The bins are of reinforced concrete, are rectangular in form and 86 feet deep. The bin walls are in general 8 inches thick; bin capacities range from 6,800 bushels to 14,300 bushels; and the total number of bins is 278, exclusive of shipping bins. Along the water side of the elevator the upper portion of each bin is used as a shipping bin. An intermediate concrete bin bottom is placed about mid-height of the bin, the upper portion of the bin discharging to the shipping conveyors and the lower portion being used as an ordinary storage bin.

The bins were constructed by the use of moving forms raised by nuts working in jack castings attached to the forms, the nuts travelling on threaded rods set vertically in the concrete walls. Rapid progress was made in the building of the walls; the height of 86 feet in the storage addition was run in less than 14 days, day and night work.

The bin bottoms are of reinforced concrete, in part supported directly on the bin girders and in part suspended from them. Each bin opening is provided with a cast-iron and steel revolving turnhead, with rack and pinion valve, opened and closed from the floor below.

Cupola.—The cupola construction is a remarkably fine example of reinforced concrete. Columns, girders, floor and roof beams, wind bracing, stairs, curtain walls, floors and roof are all of concrete. In fact, only in the case of machinery supports has structural steel played any important part. The lower sides of the floor and roof beams are cambered. Curtain walls are $2\frac{1}{2}$ inches thick, supported at short intervals by concrete ribs connecting with the floor beams. The windows are of the fire-proof type. The roof covering is of tar, felt and gravel, except on the leg towers, where the concrete is waterproofed and covering omitted.

The cupola is 107 feet high above the bin walls and 220 feet above the base of rail. This means that there are very few, if any, higher reinforced concrete buildings in existence.

Above the storage addition the cupola is but two storeys high, as the only machinery above those bins are the conveyors and spouts for filling the bins.

Marine Tower.—A marine tower for unloading boats is placed on a jetty projecting into the neighbouring slip. The tower is so placed that two vessels may be unloaded simultaneously, one lying along each side of the jetty. The tower is placed 340 feet from the elevator. It is built of structural steel, this material being adopted instead

of concrete because it is expected that in the event of the Georgian Bay canal being built and 600 feet vessels being brought to Montreal for unloading, it may be desired to extend the jetty farther and move the tower to such a distance from the shore that 600 feet vessels may be unloaded without interference. As the shorter jetty is, however, better adapted to present congestion in the harbour, it has been adopted until such time, as the increased size of lake boats coming to Montreal will require its extension.

A steel gallery runs from the marine tower to the elevator, and contains the conveyor belts for taking grain received by boat to the elevator.

Shipping Conveyor Galleries.

The diagram shows the extensive system of shipping galleries built and contemplated. Those already built in connection with elevator No. 1 were two miles in extent. Those to be added in connection with elevator No. 2 will bring the total to $2\frac{1}{2}$ miles, using ten miles of rubber belt. All galleries are of steel, with concrete floors and roofs, and corrugated steel side covering.

Miscellaneous Structures.

A reinforced concrete building is provided for a grain dryer and its boiler plant, and there is a similar structure for the transformers and switchboard.

Equipment.

Receiving from Cars.—There are four receiving tracks, 24 track hoppers and 12 receiving legs. Each leg is fed from two hoppers, one on either side, interlocking valves being used so that it is impossible for grain to reach the leg from more than one hopper at a time. Track hoppers are of large size, and a pair of power shovels is provided at each. Thus the unloading of a car on one side of the leg is independent of that on the opposite side, and unloading from both cars may proceed simultaneously, as the legs are of sufficient capacity (12,000 bushels per hour each) to quickly elevate the contents of either hopper as soon as the elevation of the contents of the other has been completed.

The elevator will receive 240 cars in ten hours with the ordinary complement of men, and with extra men can better this in emergencies. Cars are handled by heavy car-pullers using $\frac{3}{4}$ inch wire cable. Each receiving elevator discharges to a 2,500 bushels garner over a 120,000 pounds Fairbanks Hopper Scale, whence the carload is sent by spouts, or belt conveyors and spouts, to the desired bin.

Receiving from Boats.—The marine tower is equipped with two marine legs, each of 20,000 bushels hourly capacity on the dip. One leg operates on each side of the tower, so that two boats may be unloaded simultaneously. The grain from the legs is weighed by two pairs of 6,000 pounds Fairbanks continuous automatic weighing machines. Complete ship shovel and clean-up shovel apparatus, operated by air, and the best of equipment for raising and lowering the legs and adjusting them horizontally to the position of the boats, is provided.

The marine legs are of steel, 115 feet long between centres of pulleys, and are the longest marine legs ever constructed.

Two 40-inch belt conveyors carry the grain to the elevator, where two loafer legs elevate it to the cupola. There, a system of 40-inch belt conveyors distributes it to the double-jointed spouts leading to the bins. The maximum hourly capacity for receiving from boats will be 40,000 bushels.

Distributing.—Two reversible longitudinal conveyors in the cupola receive from the scales and distribute grain longitudinally of the elevator.

SESSIONAL PAPER No. 21

Cleaning.—While Montreal is not a cleaning point, two large steel cleaning machines are provided for emergency cleaning and separating.

Shipping to Cars.—Four carloading spouts are provided so that cars may be loaded if desired. This sometimes becomes necessary in order to get grain to a winter port farther east after the port of Montreal has been closed.

Shipping to Ocean Vessels.

In connection with elevator No. 1, the shipping conveyors serve fourteen vessel berths on King Edward, Alexandra and Jacques Cartier piers and the neighbouring shore wharfs. Five berths are being added on the new Victoria Pier.

The side shipping gallery of elevator, No. 2 contains six shipping conveyors. Two will extend north to serve the Victoria pier, and four will run south to connect with the conveyors to the present fourteen berths. It will be possible for either elevator to ship to any of the nineteen berths.

The shipping system of elevator No. 2, will be served by five shipping legs, each with a capacity of 16,000 bushels per hour. The total shipping capacity of elevator No. 2, starting with the shipping bins full, will be 90,000 bushels hourly for ten hours.

Grain for shipment by boat is weighed through five pairs of 5,000-pound Fairbanks automatic weighing machines, each provided with automatic registers, printing devices and electrical counters in the weighman's office. As shipping to boats and receiving from boats continuous operations, automatic scales are used for this work; but as it is necessary in receiving from cars to keep each car weight separate, hopper scales are employed for car receipts.

Drying System.

A Hess drying plant with a capacity of 5,000 bushels per day is included in the equipment. This has a separate leg so that interference with the main receiving and shipping legs is avoided.

POWER.

All power is supplied by electric motors of the induction type. In the elevator, marine tower and the new shipping galleries, the motors number eighty, the total being 4,680 horse-power.

An ingenious and efficient system of electric signals controls the operation of elevator legs and shipping conveyors. When the extent of the shipping system is remembered, and the interconnection of the two elevators, it will be seen that the signal system, particularly for shipping, must be instantaneous and sure. Its design was accomplished with credit.

The system as it now is.

The harbour commissioners' grain storage and shipping system will now consist of the following:—

Two grain elevators, with two marine legs each and a conveyor system by which grain can be delivered from either elevator to any of nineteen steamer berths. Everything is of fireproof construction and all machinery is electrically driven. There is a storage capacity of 3,620,000 bushels and contemplated extensions for 3,790,000 bushels more; total 7,410,000 bushels. Grain may be received from cars at a rate of 33,000 bushels per hour and at the same time from boats at a rate of 55,000 bushels per hour.

Grain can be shipped by the conveyor system to ocean steamers at their regular berths at a rate of 150,000 bushels (equal to 4,500 tons) per hour. It is possible to deliver grain to five steamers at the same time at a rate of 30,000 bushels per hour to each, or it is possible to deliver to ten steamers at the rate of 15,000 bushels per hour to each at the same time.

4, GEORGE V., A. 1914

The present conveyor system comprises two miles of conveyor galleries and over eight miles of rubber belting. In addition to this there is under construction another half mile of gallery with two miles of rubber belting.

Item 3.—The Improvement and Extension of the Harbour Railway Tracks.

The harbour front of Montreal, which has been developed in the past with a view to usefulness only during the season of open navigation, is, owing to its situation, too valuable to be closed during the five months of winter season.

For the carrying out of the instructions of the commissioners, to make the port of Montreal the best possible terminal connection between the transcontinental railway systems of Canada and the North Atlantic steamships, the shore area of the harbour has been designed as a convenient railway terminal. The railway track being operated directly by the harbour commissioners, such supervision can be made of traffic as to permit of extensive shunting and to give convenient access for railway freight to all points on the wharves at all hours, day or night.

The Grand Trunk and the Intercolonial railways connect with the harbour front at its extreme upper or westerly end. The Canadian Pacific and Canadian Northern railways reach the harbour towards the lower or eastern end.

The large harbour transit sheds, otherwise idle during the winter, are very well adapted for the handling and delivery of steamship freight by rail from winter ports.

The harbour extension plan of 1909 called, therefore, for such improvements as would make this valuable water front available for use during the winter. So far advanced is the work that the Canadian Pacific, Grand Trunk, Intercolonial and Canadian Northern Quebec Railway companies are now handling a large share of their winter steamship and local freight from the harbour sheds.

The success of the traffic already justifies the expenditure, and the harbour front is now a busy point during the winter for the transfer of railway cars between railways and for the delivery and receipt of city local freight.

From the Victoria pier eastward there are now no dangerous level crossings. Along this distance the tracks have been raised from the low level, always flooded during winter, to high level, access being given between the wharves and the city by eleven subways at the principal points. With the increase of the shunting and railway traffic these subways are of inestimable advantage both with regard to the safety of life and property and also for the convenience of traffic.

In view of the success of those high level tracks and the increase of traffic large additions have already been required, and instead of two single lines between Victoria pier and Molson's creek there are now additional lines with three ramps leading to the low level, and instead of eight subways, as originally designed, eleven have been constructed.

In 1912 improvements and additions were made as follows:

A railway grain yard was constructed to high level, between elevator No. 2 and Beaudry street. This grain yard is carried over the subways on steel bridges. There are eight tracks and the yard has a capacity for a large number of grain cars as required for the operation of elevator No. 2.

Item 4.—New Victoria Pier and Market Basin.

In the scheme of harbour extensions of 1909 every consideration was given not only to the enlargement of steamship accommodation but also to give additional and convenient accommodation to the important fleet of river and ferry steamers.

It was recognized that the river steamers, which do a tremendous passenger and market traffic, should have a location in the harbour convenient to the centre of the city and to the Bonsecours market.

SESSIONAL PAPER No. 21

The construction of this large pier in the very centre of the congested harbour district is one of the most serious matters occupying the attention of the engineering department. Every effort is made to advance the work without undue cost and also not to interrupt the immense traffic which is carried on during the seven months of the navigation season.

The pier has been designed so that the upper and outer portions are to be devoted to steamship traffic and with a view to steamer trains for the immediate transfer of passengers between the steamship and railways. Permanence of construction and the ample dimensions of the berths, having a depth of 35 feet at low water, are the features of design for the steamship portion of the work.

The Market Basin is designed for the safety and convenience of the large passenger and vehicle traffic between the city and the river vessels. Three large and easy ramps lead from the city direct to the low wharfs, giving roadways and sidewalks which pass underneath and free from railway traffic. The new wharfs being built for river craft are built for convenience of the steamer low gangways, at low water level, and they are built of the same general character for permanence as those of the high level. Slips, frequent and wide, have been designed to meet the requirements of the local steamers.

In the construction of these quay walls several new features have been employed. The cribwork substructure is built with double face timbers and very great additional strength.

The concrete wall of the superstructure is also built of additional strength, with new designs for the mooring of vessels.

A new arrangement has been designed and successfully carried out in connection with the construction of the lower part of these concrete quay walls. Mass concrete deposited in water has always proved difficult of perfect construction, and when the face is imperfect in the vicinity of the low water, where the November frosts attack it, the wall, in a few years, becomes eaten away and undermined. Footing blocks of concrete moulded in air have been used for some years. They are quite successful as regards giving a permanent concrete face in the vicinity of low water which is not attacked by frost. The blocks, however, do not fit themselves to the top of the wooden Canadian cribs in such a way as to give the degree of stability or such uniform bearing surface as considered necessary where the heavy concrete retaining wall is founded on timber substructure.

Reinforced concrete shells of an absolutely new design were tried in 1911 and 1912 and proved fully successful. These shells are 6 inches thick, fully reinforced with steel rods, the surface glazed and hardened, and are made to fit the top of the cribwork. They are in sections about 20 feet long and the full width of the bottom of the concrete wall.

A derrick lifts them from a scow and places them accurately in position, and when the interior is filled with concrete from the mixer it forms four feet of solid wall above the top timbers and gives a perfectly stable foundation for the wall with even bearing surface so as not to unduly fatigue any parts of the timber.

When the top of the shell is reached the wall is above water and the wall is built as a direct wall in air with a perfect face.

It has been found that vertical quay walls are much more convenient for present day ships than walls having an angle, and the quay walls are now designed vertical. This requires careful design for stability, but when completed it obviates much of the danger of either the ship or the crib being damaged under water, as is the case in walls having a batter.

Item 5.—Shed No. 16 on the High Level Victoria Pier.

The new steel shed which was commenced in the fall of 1910 was opened for traffic in August, 1912, and was used continuously until the close of the season.

4 GEORGE V., A. 1914

The concrete foundations were put in under contract by The Simplex Concrete Piling and Construction Company.

The concrete walls and piers were built departmentally by the harbour commissioners.

The steel shed superstructure was built under contract by The P. Lyall & Sons Construction Company.

The shed is 484 feet long and 100 feet wide, of the structural steel skeleton type, with reinforced concrete floors and roof and corrugated iron covering. The columns have been spaced so as to give the maximum area of storage capacity, having bays at 27 feet 9 inches, 42 feet, and 27 feet 9 inches. The longitudinal panels on the lower floors are 22 feet long and on the upper floor 44 feet long. Both sides of the shed are fitted with galvanized iron rolling doors, and on the roadway side rolling-up doors of the maximum height of the shed are provided for the handling of very large package freight.

The lower floor is fitted up with the necessary offices for wharfinger, marine superintendent and staff, and the upper floor with first and second class waiting rooms, restaurant and baggage room, having lavatories and all conveniences.

A conveyor gallery is to run the whole length of the shed and will be connected with elevators, Nos. 2 and 1.

The foundations for shed 16, presented unusual difficulties. The new shed was required most urgently. The quay wall was founded 37 feet below low water, and the shed floor being at a height of 28 feet above low water, the newly filled ground on which the front of the lower floor of the shed was laid was 65 feet deep.

By special construction concrete buttresses were built up with the quay wall to strengthen the piling for the front of the shed. The balance of the foundations were placed upon reinforced concrete 'moulded in air' piles, a system which was found so satisfactory that it was adopted by the John S. Metcalf Co. for foundations for the extensions to elevators, Nos. 1 and 2. The piles were moulded and inspected on the ground, and unquestionably the proper quantity of piles were moulded.

The driving was only done during long day shifts. It was in charge of an assistant engineer, supervised and inspected by the chief inspector and a special inspector.

The steel columns of the shed were designed to rest on concrete piers supported on these foundations. Shortly after the construction of the steel work, three of the columns of the 88 showed signs of settlement. These concrete bases were enlarged to give more footing, but settlement continued, and consideration has been given to some method of putting in new foundations for these three piers, viz.:—12 cylinders as adopted in other difficult foundations in Montreal, or steel pipes to be driven in sections and filled with concrete.

The lower floor of the shed was designed to be laid on the filled ground. This ground was levelled and rolled by a steam roller after wetting for three weeks, before the contractors were permitted to lay the concrete floor slab. The original specifications provided for the laying of the 2-inch finishing surface of mastic asphalt only after a season's settlement, and this is the only part of the contract not completed.

The ground settled more than expected, resulting from filling in winter, but the shed was opened for traffic by steamship companies before the end of August, 1912, less than 10 months after the date of the contract.

The special features of this shed are the lighting, its extra width and the office and passenger accommodation.

Between the shore side of the shed and the quay wall a railway track has been laid and the surface paved with concrete.

The water service and sewage system have been extended so as to include the part of the new Victoria Pier occupied by shed 16.

SESSIONAL PAPER No. 21

Item 7.—New High Level Wharfs, Sections 24 to 30.

The construction programme included the raising and continuation of the widened bulkhead quay wall from the lower end of the market basin, opposite Beaudry street tunnel, down sections 24 to 30.

The plans provide for this part of the wharf to be raised to high level so that permanent sheds may be constructed. The current is very rapid, and the dredging away of the old timber cribs built years ago for light draft vessels, and the holding in place of the new cribs, was attended with much anxiety. The proposal is to build to the low level stage during the first year and raise it to high level the second season. By the end of the season of 1913 it is expected that a site for the first shed will be ready.

Item 16.—Floating Dock 'Duke of Connaught.'—Negotiations.

At various times for many years, the harbour commissioners of Montreal, urged on by the shipping and business interests, have endeavoured to solve the problem of the establishment of a dry dock at Montreal.

Sites have been chosen from time to time and plans and estimates made. Good sites were available within the Harbour boundaries, but these being above the St. Mary's current the location was not approved, on account of the difficulty in towing a disabled steamer up the current.

Below the St. Mary's current, from Hochelaga to Longue Pointe, sites more or less suitable were recommended, each of which would have involved the purchase of a large area of land.

The enormous cost of a graving dock, estimated at two and a half millions of dollars, not including the purchase of land, was too great a problem to face.

The negotiations with a ship-building firm and the final incorporation of The Canadian Vickers, Ltd., solved the problem.

The harbour commissioners furnished the site, all located on harbour property, in such a position that none of the river front railway lines would be cut, no streets crossed, the Ship Channel not interfered with, and with everything in line for future extension of the harbour.

The commissioners undertook to dredge the deep basin and to furnish a site of 30 acres of made land.

The rental from the land and the increase in harbour traffic is expected to pay the harbour commissioners the interest on the cost of outlay.

Montreal harbour will, therefore, not only have a floating dock capable of docking the largest vessel trading to the St. Lawrence at practically no burden to the harbour finances, but there will be established naval construction works capable of building, in Canada, any vessel from a dreadnought to a full-sized merchant ship.

The preliminary surveys and borings proved that the site was well adapted and the construction results have confirmed these investigations.

It is probable that a more favourable site or location could not have been found in the district, or even in Canada. The labour market, the location in connection with the Montreal Steel Foundries; Locomotive Works; Structural Steel Works; National Bridge Works and the Canada Cement Works add to the features of success. Transportation by water, either ocean or inland, and railway shipments by harbour railway lines, connecting all Canadian railways, will also add to the economic features of the works in a measure which can scarcely be realized.

It is probable that no shipyard on the American continent has so many features favourable to success as the floating dock and naval construction works of The Canadian Vickers, Ltd., in Montreal harbour.

In 1907, Messrs. Vickers, Sons & Maxim, Ltd., in association with another ship-building firm, sent a delegation of six experts to study the local situation with a view to locating a naval construction and repair yard in Canada.

4 GEORGE V., A. 1914

Experts in civil engineering, ship building, ordinance, metallurgy and locomotive construction spent the summer in Canada making a study of various locations, including Sydney, Halifax, St. John, Quebec, Montreal, the great lakes and Vancouver. Montreal was chosen as the site, and a careful examination was made of the physical situation with a view to a location having the required advantages.

In 1908, the President and the chief engineer of the harbour commissioners when in England, had many conferences with Messrs. Vickers, Sons, & Maxim, Ltd., and the site was finally located at Molson's creek, where the floating dock is now established.

Description.—This dock, one of the largest yet constructed, is capable of accommodating the largest existing vessel of the British navy. It is of the double-sided, self-docking, type, and consists of a pontoon, or lifting portion of the dock, and two parallel side walls, built on to and forming part of the same, and the whole length is divided into three complete and separate sections, which, when bolted together, form the entire dock. These sections are so arranged that when the dock is separated into its three parts any two of them can dock the remaining third between them. For this purpose each section is fitted with its own independent pumping machinery, so that it can also act as an independent unit. The general dimensions of the dock are as follows:—

Length over platform, 600 feet.

Width over all, 135 feet.

Depth of pontoon at centre, 17 feet.

Length of side walls, 470 feet 6 inches.

Height of side walls, 59 feet.

Width of side wall at base, 17 feet 6 inches.

Width of side wall at top, 12 feet 6 inches.

Clear width between roller fenders, 100 feet.

Draught of vessel for docking, 30 feet.

Lifting capacity, 25,000 tons.

For the purpose of dealing with commercial vessels, which ordinarily will not have the weight or dimensions of the dreadnoughts, the dock has been designed so that it can work when required in two independent units of unequal size.

The pumping installation of the dock is driven by steam generated in boilers carried on the dock itself. Each section of the dock has its own complete pumping installation, and each installation consists of two boilers and two engines and pumps installed in specially constructed chambers on one of the walls. The pumps, which are of the centrifugal type, 17 inches in diameter, are seated on a main drain at the bottom of the dock, which is continued over practically the whole length of each section. From the main drain compartment pipes are led to each separate watertight division of the dock.

Each valve house is in telephonic communication with its respective engine-room and also with the others when the dock is working as a single unit. Each section of the dock is also provided with a direct-acting steam pump, arranged to draw from the sea and capable of providing a full stream of water for fire service or washing down vessels. These pumps are also connected to the main drain, so that they may be used as a drainage service for completely emptying the compartments. Two similar steam pumps are also fitted on the opposite wall of the dock. Steam heating is provided to prevent water in the compartments from freezing and also for the mechanism that could be affected by frost.

The dock will be lighted throughout the machinery compartments by means of electric lamps. The outside lighting consists of bracket standards, each supporting a cluster of lamps. Box terminals are also fitted on the walls, from which lamp clusters can be taken by flexible leads for lighting any particular portion of the ship on the dock. Electric current will be supplied through cables from the shore.

SESSIONAL PAPER No. 21

The berth where the dock now lies is 1,000 feet in length and 500 feet wide, with a depth in the centre of 50 feet at low water. Special mooring attachments were constructed in the concrete quay wall for manœuvring the dock during docking operations and for holding her safely while repair work is going on.

Item 14.—Dredging Generally.

The principal general item of work in connection with the harbour extension is an item for dredging and filling in general.

Item 14, in the recommendations of the board of consultative engineers, reads as follows:—

‘Dredging and filling, in general, including dredging for wharf accommodation, for widening the channel opposite St. Helen’s island and Ile Ronde; altering the lower end of the Guard pier; widening and deepening the harbour inside the Guard pier, and deepening the channel between St. Helen’s island and the south shore, to lessen the St. Mary’s current and obtain the necessary material for the construction of the piers and wharfs.’

The enlargement of the harbour in the vicinity of the Victoria pier, and eastward, requires the diversion of the Guard pier to give the necessary room.

The main channel between the wharfs and St. Helen’s island and Ile Ronde requires to be enlarged.

As compensation for any works restricting the present flow of the river, it is proposed to enlarge the channel between St. Helen’s island and the south shore.

Besides the necessary works of excavation, large quantities of filling material are required in connection with the extensions.

One of the most important undertakings in connection with this item is the removal of the artificial works at Moffatt’s island.

A wharf was built at Moffatt’s island about 1850 for the purpose of taking railway cars out to sufficiently deep water at the ferry landing slips.

After the completion of the Victoria bridge, in 1860, this wharf was not required and it has long since been abandoned.

The piers and foundations for this approach on the wharf, although subject to heavy ice shoves, have resisted the winter conditions and are still standing several feet above low water level.

The diversion of a large portion of the current from its natural channel south of St. Helen’s island has increased to a very large degree the St. Mary’s current. This current is the most serious obstacle to navigation and the greatest disadvantage to construction in Montreal harbour. It has been estimated that by removal of the artificial works at least 15 per cent more water will flow by the south channel at low water season than at present, and this will result in greatly improved conditions and facilitate the continuation of the construction work urgently necessary at Victoria pier.

Owing to the strong current, it has been found impossible to remove this artificial work by dredging. It is proposed to remove it by locomotive cranes and to haul the material for deposit along the south shore. The railway approaches have been constructed and the plant acquired.

Item 14 is to cover all of these subdivisions of the work of dredging and filling, including the plant for their required execution.

General Improvements.

Sheds on Tarte Pier.—Two single story permanent freight sheds on the Tarte pier were commenced in July, 1911. The contract was awarded to Mr. E. G. M. Cape, general contractor. The two sheds have each a floor area of 32,000 square feet. The foundations, floors and columns are of concrete.

4 GEORGE V., A. 1914

The roof is so designed that if in the future the business requirements require it, an additional storey may be constructed. These two sheds were completed and handed over to the steamship companies in July, 1912.

The two sheds of the second set on the lower side of the Tarte pier were commenced during the summer and are expected to be completed for the opening of navigation, 1913.

In connection with the first two sheds, the commissioners have laid railway tracks for the entire length and have also laid a complete drainage and water service. A large area of the roadways has also been graded and macadamized.

New Engine House and Harbour Yard.—The new concrete structure which was in course of construction during 1911, was entirely completed in the summer of 1912. The staff and tools were then transferred from the old yard on Papineau Ave.

An outfit of modern iron working and woodworking machinery was purchased and installed and is in successful operation.

Dominion Coal Wharf at Hochelaga.—A small quantity of filling and grading was done at the Coal Company's new wharf, sections 37 and 38.

New Ferry Wharf at Racine Pier.—The new pile wharf, which was nearly completed in 1911, was graded and finished early in the season and taken into use.

St. Helen's Island Ferry Wharf.—Advantage was taken of the high water in the spring to deposit the remainder of the filling required for the approach to this wharf. The whole work was completed and the wharf was in use, as usual, during the entire season by the city ferry boats.

Paving Commissioners Street.—The commissioners paved the crossings at all the gate openings in the flood wall, for the city of Montreal, who pay interest on the cost.

New Railway Sidings.—In addition to the tracks laid on the high level railway, sidings have been constructed at the following places:—

Dominion Coal Company, Hochelaga.

Lasalle avenue.

Tarte pier.

Racine pier.

Victoria pier in front of shed No. 16.

Dry dock wharf (work siding).

Construction plant.—The commissioners' construction and operation plant, consisting of dredges, derricks, tugs, scows, drill boats, concrete mixers, locomotive cranes, floating cranes, electric hoists and general equipment, is known as one of the most extensive and up to date in the country.

During the season 1912, important additions and improvements have been made to this plant.

Dredge No. 6.—A powerful spoon dredge was completed and put to work on the 6th September, 1912.

This vessel was designed and equipped in the harbour commissioners' shops, the hull and boiler, boom, electric lighting plant and pumps being the only portions built by contract.

The dimensions of the vessel are: Length, 104 feet; breadth, 39 feet; depth of hold, 11 feet.

The engines are horizontal, non-condensing, the two main engines having cylinders 16 inches by 18 inches, the maximum pull on the dredge's cable being 180,000 pounds.

The dredge has a 7-yard bucket and is capable of dredging to 50 feet.

SESSIONAL PAPER No. 21

The vessel commenced working immediately after completion at the shops, on 6th September, and has worked continuously, day and night, working to 50 feet depth in hard material until the close of the season without interruption.

Floating Derrick No. 7.—This necessary addition to the plant has been under construction during the summer and will be completed before commencing next spring. The hull is of wood and was built at the commissioners' shipyard, and all the machinery has been designed and is being built at the commissioners' shops, the boiler and boom by contract.

The dimension of the hull are as follows: Length, 88 feet; breadth, 31 feet; depth, 9 feet 8 inches; length of boom, 76 feet.

Engines horizontal, 12 inches by 14 inches, capable of lifting 18 tons.

This floating derrick is, therefore, larger, more convenient and up to date than any other of the commissioners' derricks.

Light draught Tug for Towing Timber.—Owing to the extension of the harbour limits and the large amount of timber towing required, a small tug has been recently completed and launched at the harbour shipyard.

The hull is of wood, mostly oak, of the following dimensions: Length, 50 feet; breadth, 11 feet; depth of hold, 7 feet; draught, 5 feet 6 inches.

A vertical, non-condensing, second-hand engine was placed in this tug and a vertical boiler built in the commissioners' shop. It is proposed to call this tug the *Passe-Partout*.

Scows.—Two large, much required, strongly built, wooden flat scows were built and launched during the season, of the following dimensions: Length, 100 feet; breadth, 30 feet; depth, 9 feet.

Another flat scow was authorized and is now nearly completed.

Floating Compressed Air Plant, Locomotive Crane, etc.—A floating compressed air plant was assembled and placed on the hull of one of the old floating elevators, which had been condemned as an elevator. The hull and boiler were suitable, and a steam driven compressor, 10 inches by 10 inches by 12 inches, capable of furnishing compressed air for four boring machines or spikers, was installed. This machine was put to work and proved very successful, both in point of economy and rapidity of work for crib construction and other construction and repair work, where compressed air can be used to advantage.

For the land work and delivery of material one new locomotive crane was purchased, and a small construction locomotive with 10 side-dump cars, second-hand, were required during the season. Nine second-hand standard flat cars were also purchased to assist in the increasing requirements for handling of freight between different points on the wharfs.

Dredging.

The dredging and construction plant owned and operated by the commissioners includes five large and powerful dredges, two drill boats, five floating derricks, ten tugs, two floating concrete mixers, one floating pile-driver and a complete outfit of scows. In addition to this, there is a 100 foot boom travelling land derrick and four powerful locomotive cranes, a construction engine, ten dump cars and 25 flat railway cars. For the general work there are concrete mixers, a road roller and a complete outfit of street maintenance tools.

During the season a total of 1,201,349 cubic yards of material was dredged, a total of 26,783 cubic yards of concrete was constructed by the departmental force of the commissioners, a total of 2,186,149 cubic feet of cribwork constructed and 774,850 cubic yards of material was placed in the embankments and reclaimed land areas by derricks.

General.

The maximum number of men engaged, not including contract work or the special force engaged at elevator No. 2, was 1,339.

The important items of material were all purchased by public tender, including 9,500,000 feet b.m. of timber, 35,500 tons of broken stone, 25,000 tons unbroken stone, 33,000 cubic yards of sand and gravel, 95,000 barrels of cement, 315 tons of steel and iron castings, 735 tons steel and iron bars, 15,000 tons steam coal, 725 tons rails and fastenings and 350 tons wharf spikes and nails.

MAINTENANCE.—PART II.

The maintenance of the water front on the two sides of the river St. Lawrence, 17 miles in length, requires a great deal of care and involves a considerable annual expenditure.

In addition to this, the upkeep of the wharfs, sheds, roadways, railway tracks, buildings, water courses and facilities in general, and the removal of ice in the spring, the sweeping and watering of wharfs and roadways and the general keeping in order of harbour property makes the maintenance department important.

Fortunately, the harbour of Montreal, like the river St. Lawrence, requires very little dredging, owing to the stable character of the river bed. As a rule, dredging once completed is final.

The life saving equipment, consisting of life buoys, life poles, etc., is maintained along the whole line of wharfs and piers.

An annual amount of dredging is required at the outlet of the Elgin basin sewer for removing the sewage deposit. This requires the operation of a dredge every fall during the cold weather and occasionally in the spring in order to keep this basin in a condition fit-for navigation. The cost of this is charged to the city of Montreal.

Berth and Channel Testing.

The usual testing of the basins and channels in the harbour was commenced on the opening of navigation. Some small spots were found alongside the wharfs, which were removed by dredges. Testing was continued at intervals throughout the season.

OPERATION.—PART III.

Grain Elevator No. 1.

The following table gives the records of the operations of the grain elevator since the house has been in commission:—

Year.	Bushels.
1904..	565,355
1905..	4,356,568
1906..	944,321
1907..	1,078,289
1908..	8,661,350
1909..	11,691,071
1910..	14,906,569
1911..	13,849,475
1912..	16,179,503

Grain Elevator No. 2.

1912..	2,346,930
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Floating Elevators.

1912..	7,035,217
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Total for all elevators:—

1912..	25,561,655
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SESSIONAL PAPER No. 21

The following reports by Mr. Jere Nehin, general superintendent of elevators, gives all the necessary details of the working of the plant and quantities handled.

F. W. COWIE, Esq.,
Chief Engineer.

SIR—I beg to submit for your information and that of the harbour commissioners, the following report of grain elevators, Nos. 1 and 2, also floating elevators for the season of 1912.

I am very much pleased to have to report that the past season is the best since the harbour commissioners have been handling grain on their own account in the port of Montreal. We could have done better but were somewhat handicapped on account of labour troubles on the other side of the Atlantic, which caused our storage capacity to be fully taken up in the early summer and continued to be so until the opening of the marine part of elevator No. 2 in the forepart of November, but notwithstanding these conditions, the past season has been very successful.

I am also pleased to have to say that since my last annual report the harbour commissioners have opened up for the trade and commerce of this port, one of the finest, if not the finest grain elevator on the American continent—elevator No. 2 with a storage capacity of 2,600,000 bushels. It has two marine elevator legs of large capacity, one on each side of the marine tower, whereby we can unload two vessels at the same time. It has a capacity of unloading 240 cars per 10 hours. It has also a grain dryer and cleaner in connection with it.

All grain from cars is weighed in the old-fashioned way, but all grain received through the marine tower from vessels, and all grain delivered for export, is weighed by automatic scales.

In this elevator we have 12 car legs for receiving from cars; 2 loftier legs for receiving from the marine tower, one leg for grain dryer and 5 shipping legs for delivery of grain. We can deliver grain from elevator No. 2 to any part of the conveyor system and between elevators Nos. 1 and 2.

*Elevator No. 1.**Grain received and in store.—*

Kind.	Bushels Received.	Total Bushels.
In store end season 1911..		293,131
Wheat..	12,180,596	
Oats..	3,470,557	
Barley..	470,880	
Flaxseed..	31,994	
Rye..	25,481	
	<hr/>	16,179,508
Total..		<hr/> 16,472,639

Grain delivered and in store.—

Kind.	Bushels Delivered.	
Wheat..	12,166,797	
Oats..	3,674,889	
Barley..	501,953	
Flaxseed..	31,994	
Rye..	25,481	
	<hr/>	16,401,114
In store end season 1912..		71,525
Total..		<hr/> 16,472,639

Of above there were:—

Delivered by conveyors..	16,135,607
“ cars..	88,599
“ teams..	87,662
“ in bags..	89,246
Total..	16,401,114

The repairs on elevator No. 1 will consist of a general nature after an active season’s work, such as the overhauling and inspection of machinery, repairs to spouting, etc., except a new back required on old marine leg and new marine belt for same.

Elevator No. 2.

Grain received.—

Kind.	Bushels.	Total Bushels.
Wheat..	347,599	
Corn..	20,139	
Oats..	1,868,778	
Barley..	99,921	
Flaxseed..	3,994	
Buckwheat..	6,499	
		2,346,930

Grain Delivered and in Store.—

Kind.	Bushels Delivered.	
Wheat..	313,952	
Corn..	16,074	
Oats..	1,078,009	
Barley..	76,226	
Flaxseed..	3,994	
Buckwheat..	4,113	
		1,492,368
In store end season 1912.. . . .		854,562
Total..		2,346,930

Of the foregoing there were:—

Delivered by conveyors..	213,487
“ cars..	869,359
“ teams..	224,535
“ in bags	184,987
Total..	1,492,368

This elevator was opened for business on July 1, 1912, and on the 8th we received our first consignment by cars and on Nonvemmer 8th we received our first cargo by water, the marine tower not being ready until then, and a few days later the second marine leg was put into operation.

No repairs are required at the present time.

SESSIONAL PAPER No. 21

Floating Elevators.			
Grain transferred—			
Kind.		Bushels.	Total Bushels.
Wheat.. . . .		5,666,602	
Oats.. . . .		1,075,179	
Barley.. . . .		293,436	
			7,035,217
Transferred by elevator No. 7.. . . .		242,596	
“ “ No. 9.. . . .		305,807	
“ “ No. 14.. . . .		108,853	
“ “ No. 15.. . . .		1,239,788	
“ “ No. 16.. . . .		1,681,830	
“ “ No. 17.. . . .		1,718,761	
“ “ No. 18.. . . .		1,737,582	
			7,035,217

Conveyor System.			
Grain delivered by conveyors to following sheds:—			
		Bushels.	Total Bushels.
Shed No.	2.. . . .	718,825	
	3.. . . .	831,900	
	4.. . . .	843,112	
	5.. . . .	1,257,822	
	6.. . . .	1,498,972	
	7	1,434,211	
	8	1,217,217	
	9.. . . .	1,127,395	
	10.. . . .	578,246	
	11	1,302,325	
	12.. . . .	1,341,583	
	13.. . . .	1,643,497	
	14.. . . .	656,086	
	15	695,423	
			15,146,614
Transferred to elevator No. 2.. . . .			988,993
			16,135,607

You can see by above figures the importance of the conveyor system and the attention and ability required in handling same.

The repairs will consist of overhauling the loftier leg and machinery repairing and splicing the belts. The most costly part of the repairs will be putting in a piece of conveyor belt 310 feet long. All these repairs can be done by our conveyor staff, except the repairing of 26 goose neck spouts in addition to 6 new ones, for which we have already sent a requisition.

Electric System.

Last, but not least, I wish to say a good word in commendation of the way our electric system has been managed. It has been very satisfactorily and ably conducted.

Recapitulation.

Grain received and transferred by elevators:—

Kind.	Bushels.	Total.
Wheat.	18,194,797	
Oats.	6,414,514	
Barley.	864,237	
Flaxseed	35,988	
Rye.	25,481	
Buckwheat.	6,449	
Corn.	20,139	
	—————	25,561,655

By 723 cars.
By 294 steamers.
By 666 barges.

Elevator No. 1.

Grain received—

Wheat.	12,180,596	
Oats.	3,470,557	
Barley.	470,880	
Flaxseed.	31,994	
Rye.	25,481	
	—————	16,179,508

By 628 cars.
By 171 steamers.
By 269 barges.

Elevator No. 2.

Grain received—

Wheat	347,599	
Oats.	1,868,778	
Barley	99,921	
Flaxseed.	3,994	
Buckwheat.	6,499	
Corn.	20,139	
	—————	2,346,930

By 95 cars.
By 15 steamers.
By 17 barges.
By transfers from Elevator No. 1.

Floating elevators.

Grain transferred.—

	Bushels.	Total.
Wheat.	5,666,602	
Oats.	1,075,179	
Barley.	293,436	
	—————	7,035,217

By 108 steamers.
By 380 barges.

The whole respectfully submitted.

Yours obediently,

(Signed) JERE NEHIN,
General Superintendent.

SESSIONAL PAPER No. 21

*Electrical branch.**Report of the Chief Electrician.—*

F. W. COWIE, Esq.,
Chief Engineer.

SIR,—I beg to submit for your information the following report covering the progress and extensions made during the season of 1912.

About 5,000 horse-power in motor load and 2,500 incandescent lights, fed from power from Nos. 2 and 3 sub-stations, have been added to the system during the past season.

Growth of the electrical installation in the elevator and conveyor system.—The plant is electrically driven throughout by 3 phase, 60 cycle, 550 volts, squirrel cage induction motors, the units ranging in size from 5 horse-power to 150 horse-power.

No. 1 station feeds and controls for No. 1 grain elevator..	1,000 h.p.
For conveyor galleries..	1,785 h.p.
No. 2 station feeds and controls for No. 2 grain elevator..	3,435 h.p.
For conveyor galleries..	1,250 h.p.

This makes a total of.. 7,470 h.p.

The system is lighted by approximately 2,000 incandescent lamps and 15 arc lamps.

Power.—The current is delivered by The Montreal Light, Heat and Power Co., from their underground system to No. 1 station at a pressure of 2,500 volts. This is stepped down through three 300 k.v.a. and two 375 k.v.a. self-cooled, oil-insulated transformers for power, and through three 10 k.v.a. and two 20 k.v.a. self-cooled, oil-insulated transformers for 110 volts multiple and 440 volts series lighting respectively.

The power is received at No. 2 station at 2,500 volts, similar to No. 1, and this is stepped down through three 1,000 k.v.a. water cooled, oil-insulated transformers for power, and through three 25 k.v.a. self-cooled transformers for 220 volt multiple lighting.

The main feeders are carried from the low tension switchboard to power panels located on the different floors of the elevator and in the towers of the conveyor system.

Telephone system.—Three distinct telephone systems are in use:—

One for No. 1 elevator, comprising 7 telephones.

One for No. 2 elevator, comprising 13 telephones.

One in the conveyor system.

Conveyor system has a telephone in every tower, in each shipping gallery, one in each of the elevators and sub-stations.

The tower stations consists of a standard telephone giving communication with the other towers and elevators.

The gallery stations consist of a number of telephone jacks placed at ship loading spouts, and vary between 14 and 19 in the different galleries.

Signal Systems.—Each of the elevators has an independent signal system consisting in one case of annunciator drops and numbers, or with annunciator drops numbered, used for starting and stopping apparatus, and in the other case of red, green and blue lights used for automatic weighing of grain.

The conveyor galleries have a system of signals designed to operate a bell and light in series. These signal lights are numbered and correspond to the belt from which the signal is sent, signals from No. 1 elevator appearing on red globes, and signals from No. 2 elevator appearing on green globes.

In order that grain from No. 1 and No. 2 elevators may not be sent on the same belt at the same time, and thus cause a grain spill, an interlocking system is installed in this portion of the conveyors, and acting through a system of relays and push-buttons prevents the energizing of the signals from any other source than the first given. These remain set until the shipment is complete and the line restored to normal position.

Arc Lighting on High Level Wall, Victoria Pier.—An underground system carrying power and light cables has been commenced from Victoria pier and a number of ornamental arc lamp standards have been erected on the high level wall on Victoria pier and also between Victor and Berri street subways.

This underground system is being extended as far as Beaudry street subway with a similar type of standard.

Current is supplied from No. 2 station for these arc lamps as well as the lighting up of the subways.

These lamps are of the regenerative yellow flaming type and are of about 2,500 candle power each.

Shed No. 16.—An underground lead covered cable feeds No. 16 shed for lighting of about 300 lights in the shed and about 125 lights in the offices and waiting-rooms, and 8 arc lamps. This is also fed from No. 2 station.

No. 3 Station.—A third station for the distribution of power and light has been fitted up at the new harbour shops. This station at present takes care of about 80 h.p. in various sizes of motors from 5 h.p. to 30 h.p.

The power is used principally for driving the various machine shop tools, coal conveyors and pumps.

Provision has been made in the transformer capacity for additional motors should they be required.

Approximately 200 lights are used in the building. Power enters the sub-station at 250 volts, 3 phase, and is stepped down through three 24 k.v.a. self-cooled transformers to 550 volts for the power, and through one k.v.a. transformer, self-cooled type, to 110 volts for the multiple lighting system.

No. 6 Dredge.—A complete lighting unit was installed on No. 6 dredge comprising an 18 h.p. Robb-Armstrong engine belted to a 15 k.w.d.c. compound generator 115-120 volts.

A controlling switchboard of blue Vermont marble, with necessary instruments and switches for the care of 6 flaming arc lamps and about 30 incandescent lamps, was included in the outfit.

A new system of carrying the wires in steel conduits was used on this dredge, and has proved very satisfactory, no faults having developed through the excessive vibration of the machinery during the past season.

Wharf Office Lighting.—In the early part of April the new wharf offices situated on the west side of No. 1 elevator were nearly completed and a start was made towards installing the electrical fixtures throughout the various offices.

These electric light fittings were mostly of the pendant chain type, with a few 4-light fixtures where occasion required, the halls and porches being fitted with the opalescent ceiling type.

These offices are illuminated with 40 and 60 watt tungsten lamps, current being supplied from an underground circuit fed from No. 1 station, which enters the main distributing panel in the basement to the offices.

The Grand Trunk and Canadian Northern railways, which have leased offices in the same building, are also supplied with the same current through separate meters.

SESSIONAL PAPER No. 21

Statement of total power consumed and cost of same during 1911 and 1912 in
No. 1 Elevator.

Year.	Total Power Consumed.	Cost.
		\$ cts.
1911.....	981,399 h.p. hours	15,241 64
1912.....	1,011,572 h.p. hours	15,285 92

Electric Team Hoists.

Hoist No. 1—Sheds Nos. 11 and 12—

	1911.	1912.
Total number of teams carried..	11,997	11,956
Number of days in operation..	205	193
Commenced operation..	April 20	May 3
Stopped operation	Dec. 9	Dec. 14

Hoist No. 2—King Edward Pier—

Total number of teams carried	4,705	12,935
Number of days in operation	84	198
Commenced operation	Sept. 7	May 3
Stopped operation..	Dec. 12	Dec. 21

Floating Crane No. 1.

The floating crane was in commission during the whole season of navigation, opening same at the end of April with work of fitting out harbour commissioners' dredging fleet.

The crane was laid up for the winter on December 13.

The need of this equipment in the port of Montreal and the new trade in heavy machinery, principally resulting from having it, can be judged from the fact that in 1912 the number of lifts and their total weight has more than quadrupled over the business of 1910.

During the season the number of lifts by the crane has been 469 and the total weight 5,510 tons.

Résumé of Log, Floating Crane for Season, 1912.

Month.	Number of lifts.	Average weight of lifts.	Greatest lift.
		Ton of 2,000 lb.	Ton of 2,000 lb.
April.....	20	15 tons 792 lb.	56 tons 000 lb.
May.....	71	14 " 716 "	60 " 000 "
June	14	12 " 1,238 "	44 " 1,600 "
July.....	75	9 " 1,500 "	72 " 1,600 "
August	72	10 " 889 "	56 " 000 "
September	29	9 " 918 "	36 " 800 "
October.....	78	11 " 855 "	67 " 400 "
November	85	12 " 1,853 "	67 " 400 "
December.....	25	10 " 582 "	24 " 1,280 "
Total 1912	469	11 $\frac{3}{4}$ tons.	72 $\frac{3}{4}$ tons.
Total weight lifted 1912			5,510 "

Wharf accommodation.

The extent of the wharfs at the end of the season is as follows:—

For 30 ft. draught and over.. . . .	21,182	lin. ft. or	4.011	miles.
25 to 27½ feet.. . . .	14,890	"	"	2.820 "
<hr/>				
Total deep draught.. . . .	36,072	"	"	6.831 "
For 20 ft. and under.. . . .	3,137	"	"	0.594 "
<hr/>				
Total wharfage end of 1912..	39,209	"	"	7.425 "

Extent of Harbour Railway Tracks.

The extent of the harbour commissioners' railway tracks at the end of 1912 is as follows:—

1. South east of Lachine canal, connecting only with the Grand Trunk Railway system, and not operated by the harbour commissioners' traffic department:—

	Feet.	Miles.
Mackay pier.. . . .	10,400	1.970
Bickerdike pier.. . . .	12,162	2.303
Windmill point wharf.. . . .	12,081	2.288
<hr/>		<hr/>
Total southeast of Lachine canal...	34,643	6.561

2. Harbour front from foot of Lachine canal to Racine pier, connecting with Grand Trunk Railway, Canadian Pacific Railway and Canadian Northern Railway. Operated by the harbour commissioners' traffic department:—

	Feet.	Miles.
High level embankment wharfs and piers, sections 12 to 19.. . . .	38,635	7.317*
Sections 19 to 55.. . . .	60,263	11.413
Sections 55 to 62.. . . .	6,481	1.227
Low-level wharfs, sections 19 to 55	35,800	6.780
<hr/>		<hr/>
Total operated by commissioners.. . . .	141,179	26.738

Operated by railway companies:—

	Feet.	Miles.
Coal siding, sections 36-37, Canadian Pacific Ry. Co. (joint use with traffic department).. . .	2,102	0.398
Siding, sections 47 to 55, Canadian Northern Ry.. . . .	3,900	0.739
<hr/>		<hr/>

Total operated by railway companies, eastern section.. . . . 6,002 1.137

3. Industrial railway connections:—

	Feet.	Miles.
Southern Counties Railway; Windmill point...	475	0.090
Locomotive wharf.. . . .	1,350	0.255
Longue Pointe village wharf.. . . .	160	0.030
Lasalle Avenue.. . . .	51	0.005
Shell Co. of Canada.. . . .	504	0.095
<hr/>		<hr/>
Total.. . . .	2,540	0.481

Grand total tracks on Harbour in use in in 1912 184,364 34.917

	Feet.	Miles.
Moffatt's island, St. Lambert, construction track..	5,850	1.11

* Nearly.

SESSIONAL PAPER No. 21

Depth of Water.

The depth of water in the ship channel was exceptionally good during the season, due to the rainfall and late spring season.

The following table gives a comparison of the monthly averages of the depth of water on the old No. 1 Lachine Canal lock sill, with the corresponding depth in the harbour ship channel:—

Month.	Depth on old Lock Sill. Lachine Canal.		Depth in Har- bour Channel.
	Average. 1902 to 1911.	Average. 1912.	Average. 1912.
May.....	20 ft. 0 in.	20 ft. 0 in.	35 ft. 5 in.
June.....	19 " 6 "	20 " 5 "	35 " 10 "
July.....	17 " 5 "	16 " 7 "	32 " 0 "
August.....	16 " 3 "	15 " 6 "	30 " 11 "
September.....	15 " 6 "	15 " 3 "	30 " 8 "
October.....	15 " 5 "	15 " 3 "	30 " 8 "
November.....	15 " 4 "	16 " 9 "	32 " 2 "

Labour.

The following table shows the maximum and average number of workmen employed directly by the harbour commissioners during the season of 1912.

	Maximum.	Average.
Construction of wharfs, elevator, etc..	1,557	946
Maintenance, cleaning, removing of ice, etc.. . .	201	46
Harbour yard, carpenters, blacksmiths, etc.. . .	14	10
Sawmill and timber boom, sawyers and handymen	31	26
Machine shop, machinists, blacksmiths, etc.. . .	80	64
Shipyard, carpenters, labourers, etc..	104	80
Dredging fleet, crews of dredges, tugs, etc... . .	294	246
Grain elevators, foremen and operators... . . .	58	41
Floating elevators, foremen and operators... . . .	23	23
Shed repairs and maintenance...	31	13
	2,393	1,495

The working day in general is 10 hours, but the hours were lengthened to 11 and 11½ hours during the busy season, and part of the work of construction and the dredging operations were carried on by both day and night shifts.

The report of Mr. A. D. Swan, assistant chief engineer, with table of details of construction work, and tables of quantities and costs prepared by Mr. George Smart, accountant, are hereto annexed.

I am, sir,

Yours obediently,

F. W. COWIE,

Chief Engineer.

MONTREAL HARBOUR EXTENSION WORKS.

F. W. COWIE, Esq.,
Chief Engineer.

SIR,—I have the honour to present the following report showing the progress made during 1912 with the construction of new works, authorized under the 'Scheme of Montreal harbour extensions, 1909.'

The detail drawings for the works constructed during 1912 were prepared and the necessary soundings and borings taken during the winter season.

On April 1, the ice in the harbour showed the first slight sign of moving and on the 7th a small part moved away from the end of the Guard pier. On the 8th, the ice road, which had been constructed from section 20 to St. Helen's island, moved downstream about 200 feet; the road to Longueuil also began to move. On the 13th, the ice shoved down from Nun's island. On the 16th, the ice moved below Victoria Bridge, and on the 18th, the Harbour tugs began moving the fleet from its winter quarters at the Guard pier. On the 21st, the ice moved away from the site of the dry dock basin and Longue Pointe and at 3 a.m. the ice finally moved out. On the 23rd, the Longueuil and Boucherville ferry boats arrived, and on the 25th, the harbour derricks commenced to clear the enormous quantities of ice which had piled on the Victoria pier and the low level wharfs.

Dredging operations commenced on May 1, and owing to the urgent necessity of carrying on construction as rapidly as possible, the dredges and derricks worked continuously during the night as well as by day, from May 6 to November 30.

The construction work in general, with the exception of the steam cranes, which were kept going night and day, was to a large extent carried on only by day.

The following is a summary of the principal works executed:—

1. The old wharf in front of new elevator No. 2 was removed to extreme low water level and a new concrete quay wall constructed in its place for a length of 188 feet.

2. The whole of the marine tower jetty in front of elevator No. 2 was completed. The total length of this jetty is 369 feet.

3. A special track and concrete quay was formed in front of shed No. 16, Victoria pier, for a length of 492 feet.

4. At the new Victoria pier, roads have been paved and 80,000 cubic yards of filling tipped.

5. Cribs have been sunk and new quay walls constructed and entirely completed at the market basin for a length of 420 feet.

6. An area of 9,166 square yards of paving has been laid on the low level quay between Victoria pier and Beaudry street.

7. At section 25, 560 lineal feet of cribwork has been sunk and filled and a concrete superstructure constructed for a length of 421 feet. Twenty-two thousand cubic yards of filling have also been deposited at this place.

8. In connection with the high level tracks from new elevator No. 2 to Beaudry street subway, 25,000 cubic yards of filling have been deposited; concrete abutments of the Beaudry street subway have been constructed for a length of 167 feet, 415 square yards of paving has been done; a heavy retaining wall from Berri street subway to Beaudry street subway has been constructed for a length of 1,066 feet; a roadway on the high level has been constructed and asphalted for a length of 688 feet; 4,056 lineal yards of trackwork has been laid, as well as a considerable length of water mains and sewers; a railway ramp, 400 lineal yards long, has been constructed near the jail subway and a considerable number of special crossings laid.

9. At the Tarte pier 1,300 yards of trackwork has been laid, a concrete quay has been formed in front of the sheds for a length of 910 feet and over 1,000 square yards of macadam roads constructed.

SESSIONAL PAPER No. 21

10. New paved crossings have been laid on Commissioners St. opposite each of the gateways, to the extent of 2,536 square yards. A roadway has also been paved from Commissioners St. to shed 16, to the extent of 835 square yards.

11. At the dry dock basin dredging to the amount of 1,197,755 cubic yards has been carried out and $9\frac{1}{4}$ acres of land reclaimed from the river by embanking the dredged material; 1,013 lineal feet of cribwork foundation has been sunk and filled and 620 lineal feet of concrete superstructure constructed to about half its height. A slipway has been embanked and graded to the extent of 4,800 square yards and practically the whole of the dredging inside the basin almost entirely completed.

12. At Moffatt's Island over 2,000 lineal yards of construction track was laid from the south shore across to the island for the removal of the old artificial pier now blocking the stream; 8,500 cubic yards of this work has been removed. An ice breaking pier has been partially constructed.

13. The old lighthouse and 171,374 cubic yards of the old Guard pier has been dredged and removed and a new Guard pier has been constructed for a length of 1,350 feet to above high-water level.

14. A new chanel is in course of being dredged between the south shore and St. Helen's island, 284,050 cubic yards has been dredged during the season, making the total length of channel 3,825 lineal feet by an average width of 120 feet.

DESCRIPTION OF WORKS.

Item No. 1.—New Quay Wall in front of Elevator No. 2.

The work of removing the old sloping cribwork wharf along the front of elevator No. 2 and replacing same from low water with a concrete superstructure was commenced on September 9, and the whole length of 590 feet of the quay is now completed.

The material was excavated by hand and removed by scows. The concrete was prepared and deposited by floating concrete machines and, on completion, the quay space between the wall and elevators was filled in by carts from city contractors.

Marine Tower Jetty.—The cribwork of the marine tower jetty was sunk and filled during the season of 1911 and part of the concrete superstructure at the outer end constructed. A number of concrete piers to carry the bents of the overhead gallery from the marine tower jetty to elevator No. 2 were constructed early in the season of 1912 so as to permit of erecting the superstructure. This work was carried out by making and sinking in exact position special forms in which the concrete was deposited through the water.

Later in the season, when the water had receded, the ordinary quay walls were constructed by floating concrete mixer and the hearting eventually filled in by floating derrick with material dredged from the old Guard pier.

New Victoria Pier.—A track has been laid between the front of shed 16 and the quay wall for the total length of the shed and connected with the main line at the back of elevator No. 2. The part of the track in front of the shed was laid with special rails weighing 116 pounds per yard of tramway section, and the whole space from the shed to the edge of the quay finished smooth with concrete, with the necessary drains and gullies, complete.

A paved roadway was constructed from shed 16 to the new gateway in the flood wall at Commissioners St., and the whole of the quay space in proximity thereto brought up to a finished level with material tipped by city contractors.

The sloping roadway or ramp leading from the new Victoria pier to the market basin has been completed and surfaced with a special preparation of rocmac. A foot-path has been constructed in concrete and paved water channels laid.

4 GEORGE V., A. 1914

A considerable length of 12-inch water main has been laid on the new Victoria pier, as well as a 12-inch sewer for carrying the drainage from the new waiting room in shed 16 to the river.

Market Basin.—For the construction of the quay on the south side of the market basin, the old Victoria pier was cut into at the side nearest the river and a crib 189 feet 7 inches long was sunk in position and filled, and the concrete superstructure completed; in addition to which the first crib, 160 feet long, was also sunk to form a commencement of the inner side of the outer market basin, running downstream. This part of the work was proceeded with first so as not to interfere with and cut off traffic from the old Victoria pier, on completion of which the old pier was cut away and the foundations dredged out and a filling-in crib 82 feet long sunk between the newly constructed quay wall and that part of the wall constructed two years ago, the completion of which gives a shore quay wall of 463 feet 3 inches in length.

All this concrete superstructure was deposited inside reinforced concrete blocks for a height of about 4 feet from low water level, so as to insure a good face on that part of the wall deposited through the water.

Paving.—A considerable quantity of paving was done on that part of the low level quay occupied by the Richelieu and Ontario Navigation Company, extending from near the Victor street subway to near the Beaudry street subway. The paving consists of 8 inches of concrete paved with scoria blocks, a considerable part of which was taken from the old Victoria pier.

New Quay Wall, Sec. 25.—The foundations for a new quay wall at section 25 have been completed for a length of 560 feet. The bed of the river at this place was dredged to a level of 37 feet below low water, and four cribs, each 140 feet long by 45 feet wide, base, were sunk in position and filled. Considerable difficulty was experienced in carrying out this work, owing to the rapid flow of the current, but it was successfully overcome and the concrete superstructure, with buttresses to form the foundations for future sheds at this point, have been carried up to a level of 107 meantime.

This concrete superstructure was deposited inside reinforced concrete blocks for a height of 4 feet laid on and secured to the top of the cribwork, so as to ensure a good face on that part of the wall deposited through the water in the rapid current.

The filling at the back of the wall was partly deposited by floating derrick and partly dumped by city contractors.

High level on railway tracks.—The whole of the embanking for a complete system of high level tracks between Victor and Berri street subways has been completed, as well as the greater portion of that between Berri and Beaudry street subways.

Eight lines of tracks have now been laid, complete, from near Victor street subway to Beaudry street subway, with a considerable number of special crossings.

The whole of the track from elevator No. 2 to Victor street has been entirely completed and special crossings for the track at shed 16 are now being delivered.

Beaudry street subway.—The concrete abutment wall on the south side of the Beaudry street subway has been entirely completed and the abutment wall on the north side also completed for about 75 per cent of its length.

The roadway has been lowered and paved; drains have been laid, gullies built and a concrete sidewalk completed.

New roadway from Victor street to Berri street.—The new roadway on the high level from Victor street to Berri street subway has been entirely completed. The bottoming of the road was formed of old rubble stone collected from dumpings from city contractors and carefully laid and hand-packed on edge. On top of this, 4 inches thick of crushed stone was deposited and rolled and the surface finished with asphalt.

SESSIONAL PAPER No. 21

Trenches for electric light and cables were cut and cables embedded in concrete from elevator No. 2 to Berri subway.

A 12-inch sewer connection was made with the city main on Commissioners street for elevator No. 2.

Retaining wall from Berri street to Beaudry street subways.—A heavy mass concrete retaining wall, 1,066 feet in length and 19 feet 6 inches high, has been constructed between Berri and Beaudry streets. The trench for this wall was excavated by a scraper bucket crane and the concrete material was brought in on the high level tracks and shot down into the concrete mixer on the low level, whence it was deposited into the wall by steam travelling crane. The wall has been completely finished and surmounted by an iron hand railing, and at the level of market basin has a concrete sidewalk 3 feet 6 inches wide finished completely for its entire length.

New railway ramp from high to low level near jail subway.—Owing to the temporary ramp between the high and low level near Beaudry street subway being done away with, on account of works there, a new railway ramp was constructed near the jail subway for a length of about 400 yards.

In connection with this work a temporary rubble retaining wall was built for a considerable length on either side of the subway and the high level railway embankment widened so as to permit of three lines of railway being laid.

Sidings at Racine pier.—Additional railway sidings have been laid for a length of 804 lineal yards between Molson's creek and Racine pier. Embankment for this work was constructed by steam cranes from material previously deposited by floating derricks along the foreshore.

Siding for The Shell Co. of Canada at Racine pier.—An embankment has been constructed at back of the Shell Co.'s property near Racine pier on which two new railway sidings have been laid on the high level for the accommodation of their oil traffic.

New railway siding for tramway traffic at Lasalle Avenue.—An embankment has been formed and a new siding laid for a length of 344 lineal yards connecting to the tramway system at Lasalle avenue.

Tarte pier improvements.—In connection with the new sheds on the Tarte pier, one track has been laid along the front of the sheds and two tracks laid at the back of the sheds for their entire length. The quay space in front was excavated and laid with concrete, having all the necessary drains, gullies, etc., and in connection with this over 1,000 square yards of roadway approach to the pier has been macadamized.

Paved crossings on Commissioners street.—The whole of the approaches leading from the Commissioners street to the harbour at each of the gateways through the flood wall have been paved with scoria blocks.

Dry dock basin; excavation and dredging.—Dredging on the site of the entrance channel approaching the dry dock basin and the basin itself was carried on continuously night and day throughout the season. The whole of the area bounded by the basin walls, including the sinking basin, dredged to 50 feet below low water, has been practically completed and the approach channel has now been dredged from the ship channel to the basin for an average width of about 500 feet. The total amount of material dredged this season was 1,197,755 cubic yards; now completing about 85 per cent of the whole amount of dredging in connection with the dry dock scheme.

About 9½ acres of land have been reclaimed and completed to grade at cope level this season, making a total area of reclaimed land about 17¾ acres.

Quay walls at dry dock.—1,013 lineal feet of quay walls have been entirely completed with tunnel for electric cable, service pipes, etc.

During this season 880 lineal feet of cribwork have been constructed and sunk to an average depth of 33 feet below low water and 200 feet has been constructed and

4 GEORGE V., A. 1914

sunk to a depth of 37 feet below low water, making a total length of cribwork constructed and sunk at the dry dock basin during the season of 1,080 lineal feet; 620 lineal feet of superstructure on the cross wall at the head of the basin and the inner quay wall has been constructed to about half its total height and a considerable quantity of filling deposited at the back of the wall.

Nearly 5,000 square yards of slipway at the head of the basin have been embanked and graded.

In the construction of the concrete superstructure, reinforced concrete blocks, each 20 feet long, were placed and secured on top of the cribwork so as to ensure a good face on that part of the wall constructed through water, near low-water level.

The reinforced concrete blocks were formed in moulds in a small yard at Victoria pier. The concrete was allowed to set for not less than two weeks before the blocks were lifted. Altogether 95 blocks, varying in weight from 10 to 12 tons, were made during the season.

The floating dock arrived from England on November 2, and was officially dedicated by the Duke of Connaught on November 18.

Dredging and Filling in General—Diversion of Guard Pier.—Dredging for the diversion of the Guard pier was recommenced on May 30, and material deposited further out into the river along the line of the centre of the new pier, so as to divert the current and extend the area of still water in the upper harbour.

This diversion has now been carried up to above high water mark for a total of 1,350 feet.

The lighthouse which used to stand on the head of the old pier was removed and the concrete base blasted and dredged away and a new lighthouse constructed in lieu thereof by the Marine and Fisheries Department, near St. Helen's island.

Dredging Channel between South Shore and St. Helen's Island.—Two dredges were employed throughout the season forming the new channel between the south shore and St. Helen's island. The material dredged for the most part was rough gravel and small boulders, part of which was conveyed in dump scows to the dry dock basin and part to the diversion of the Guard pier.

This channel has now been dredged for a total length of 3,825 feet to a depth of 20 feet below low water mark and an average width of 120 feet. Altogether 284,050 cubic yards were dredged during this season.

Dredging Upper Harbour and Rock Drilling and Blasting.—A considerable quantity of rock was drilled, blasted and dredged in the upper harbour for the combined purpose of obtaining rock filling for the new wharf works and at the same time deepening the upper harbour.

The part operated on was at sections 14 to 15, and the material consisted of hard shale and trap rock.

The blasting was done from the drill boat, which commenced work on June 14 and continued until November 20. The number of holes drilled and blasted was 2,882, average depth of holes being about 9.69 feet. The total quantity of rock drilling and blasting to a depth of 35.35 feet below low water was 44,547 cubic yards, measured in situ. The quantity of dynamite used was 15,968 lbs.

St. Helen's Ferry Wharf.—A new ferry wharf was constructed at St. Helen's island during the season of 1911, but the filling and approach roadway from the island was not then completed. This work was proceeded with early in the season of 1912 when water was high and the whole work completed and in use throughout the season.

New Ferry Wharf at Racine Pier.—A new ferry wharf had been constructed at the Racine pier during the season of 1911, but not completed.

This work was resumed and completed at the beginning of season 1912, and taken into use

SESSIONAL PAPER No. 21

Widening Channel in St. Mary's Current.—On May 17, M. & F. dredge No. 1 recommended dredging at the lower end of St. Mary's current, commencing near gas buoy No. 195 at the lower side of Ile Ronde. The area dredged this season extended for a length of 1,700 feet by about 250 feet wide, or a total of 74,770 cubic yards, scow measurement.

On July 8, a small steamer the *Florida*, was destroyed by fire and sank at her moorings at the old Victoria pier. The wreck was raised by H. C. M. floating crane and successfully towed to the machine shop, where she was broken up.

Removal of city sewage from Elgin basin.—On the 25th April, the H. C. plant commenced dredging the sewage deposit at the mouth of Elgin basin sewer at section 15, and again at the end of the season, on November 30, this work was recommenced and carried on until December 12.

The material dredged was towed outside the Guard pier and dumped into the swift current.

Moffatt's island.—The work of removing the old artificial embankment of the pier between the south shore at St. Lambert and Moffatt's island was commenced on July 23, 1912, and by arrangement a temporary railway track was connected with the Montreal and Southern Counties railway at the subway near the south end of the Victoria bridge and thence laid along the foreshore for a length of 3,000 feet, to the site of the artificial piers extending across to the island. At this point a number of small bridges had to be laid to carry the tracks across towards Moffatt's island and beyond same to the extreme end of the old pier, a distance of about 3,000 feet from the shore.

This preparatory work and temporary track laying occupied until 30th August, on which date actual removal of the old pier at the outer end commenced. The material was filled into dump cars by steam cranes, with a scraper bucket and with skips filled by hand. The dump cars were then taken by locomotive to the south side of the river and the material deposited along the foreshore extending northward from Victoria bridge embankment. The work was carried on continuously day and night, and about 8,500 cubic yards were excavated.

An ice pier was partially constructed near the outer end, and at the end of the season the track was anchored down to the rock with wire rope at short intervals and loaded with rubble stone, so as to prevent its being washed away during the winter.

About 140 men were employed on this work and were conveyed to and from the city by special street cars.

General Notes. Weather.

The weather during the construction season was exceptionally wet and a considerable amount of time was lost on this account.

A complete schedule of measurement of work done during the season of 1912 is appended hereto.

Yours obediently,

A. D. SWAN,
Assistant Chief Engineer.

SCHEDULE OF MEASUREMENT OF WORK EXECUTED, 1912.

ITEM NO. 2—PART 1.

Elevator No. 2.

Marine Tower Jetty—

Timberwork in sub-aqueous forms.....	880 cu. ft.
Sinking sub-aqueous forms.....	4 number.
Concrete in forms and piers.....	630 cu. yds.
Concrete in quay wall.....	3,060 cu. yds.

Shore Wharf in front of Elevator No. 2—

Removing old cribwork.....	3,080 cu. yds.
Cutting heads of piles.....	153½ lin. ft.
Timber waling 12 in. x 16 in.....	298 cu. ft.
Concrete in quay wall.....	1,770 cu. yds.
Refilling around elevator No. 2.....	7,450 cu. yds.

ITEM NO. 3.

High Level Railway Tracks.

New permanent way laid.....	3,372 lin. yds.
Embanking by derrick.....	6,750 cu. yds.
Filling by city contractors.....	34,800 cu. yds.

Sidings—

Elevator No. 2.....	551 lin. yds.
Dominion Coal Co.....	134 lin. yds.
Engine house.....	527 lin. yds.
Embanking for engine house siding.....	2,300 cu. yds.
Lasalle Ave. (on H.C.M. property).....	344 lin. yds.
Lasalle Ave. (further than H.C.M. property).....	17 lin. yds.
Racine pier.....	780 lin. yds.
Filling by derrick for Racine pier sidings.....	40,425 cu. yds.
Dry dock.....	945 lin. yds.
Locomotive Co.....	162 lin. yds.
Shell Co. (on Shell Co.'s property).....	168 lin. yds.
Shell Co. (on H. C. M. property).....	135 lin. yds.
Drains.....	116 lin. yds.
Cesspools.....	7 number.
Excavation for electric conduits.....	247 lin. yds.
Ducts for electric conduits.....	493 lin. yds.
Excavation for water pipes.....	382 cu. yds.
Pipes laid.....	1,040 lin. ft.
Concrete in Victor st. subway abutment.....	2 cu. yds.

Beaudry St. Subway—

Excavation for abutments.....	572 cu. yds.
Concrete in abutments.....	1,046 cu. yds.
Excavation for roadway.....	197 cu. yds.
Concrete bottoming.....	70 cu. yds.
Paving with scoria blocks.....	415 cu. yds.
Sidewalk.....	97½ sq. yds.
Drain.....	9 lin. yds.
Cesspool.....	1 number.

Roadway alongside High Level Railway—

Cement sidewalks.....	116 sq. yds.
Water channel.....	116 sq. yds.
Bottoming, 8 in. thick.....	1,482 sq. yds.
Macadamizing, 4 in. thick.....	1,367 sq. yds.
Asphalting.....	1,367 sq. yds.
Asphalting on road span of Victor st. bridge.....	70 sq. yds.

Ramp at Jail Subway—

Filling.....	3,544 cu. yds.
Taking down and rebuilding rubble wall.....	998 cu. yds.
Cribwork	64,195 cu. ft.
Track removed.....	267 lin. yds.
Track slewed.....	175 lin. yds.
Track laid.....	394 lin. yds.

SESSIONAL PAPER No. 21

SCHEDULE OF MEASUREMENT OF WORK EXECUTED, 1912—*Continued.*

ITEM NO. 4.

*New Victoria Pier and Market Basin.**New Victoria Pier—*

Filling by city contractors.....	73,450 cu. yds.
Filling by derrick.....	1,500 cu. yds.
Drains.....	10 lin. yds.
Concrete foundations for shed 16.....	840 cu. yds.
Permanent way, front of shed 16.....	165 lin. yds.
Concrete in permanent way, front of shed 16.....	368 cu. yds.
Filling in shed 16.....	16,500 cu. yds.

Paving between Shed 16 and Commissioner St.—

Concrete bottoming.....	83 cu. yds.
Paving with scoria blocks.....	500 sq. yds.
3 in. planking.....	3,367 sq. ft.
Excavation for pipe track.....	238 cu. yds.
12 in. drain.....	88 lin. yds.
12 in. water main.....	111 lin. yds.

Ramp from Victoria Pier to Market Basin—

Excavation.....	291 cu. yds.
Bottoming 8 in. deep.....	583 sq. yds.
Paving with Rocmac 4 in. deep.....	506 sq. yds.
Paving water channel with scoria blocks.....	28 sq. yds.
Concrete under water channel.....	5 cu. yds.
Cement sidewalk.....	37 sq. yds.

Market Basin—

Dredging.....	55,640 cu. yds.
Cribs.....	268,115 cu. ft.
Concrete in quay wall.....	1,694 cu. yds.
Concrete in anchor blocks.....	60 cu. yds.
Reinforced concrete blocks (set No. 10).....	2,342 cu. ft.
Filling by derrick.....	60,150 cu. yds.
Filling by city contractors.....	1,890 cu. yds.

Paving Wharf—

Excavation.....	3,172 cu. yds.
Concrete bottoming.....	1,508 cu. yds.
Paving with scoria blocks.....	9,055 sq. yds.
3 in. planking.....	8,532 sq. ft.
Cement sidewalk.....	384 sq. yds.
Drains.....	184 lin. yds.
Gulley.....	1 number.

Extension of Slips—

Concrete bottoming.....	36 cu. yds.
Paving with scoria blocks.....	111 sq. yds.
Cutting old cribwork.....	660 cu. yds.
Erecting and removing temporary bridges.....	2 number.
Drains.....	6 lin. yds.

Retaining Wall, Berri to Beaudry Sts.—

Excavation.....	2,546 cu. yds.
Concrete.....	6,067 cu. yds.
Railing.....	870 lin. ft.
Drains.....	21 lin. yds.

ITEM C. (5).

Dominion Coal Wharf.

Filling by derrick.....	7,650 cu. yds.
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4 GEORGE V., A. 1914

SCHEDULE OF MEASUREMENT OF WORK EXECUTED, 1912 - *Continued.*

ITEM 16.

Dry Dock Basin.

Dredging (by H. C. M. dredges).....	568,630 cu. yds.
Dredging (by M. & F. dredges).....	643,025 cu. yds.
Cribs.....	1,145,752 cu. ft.
Piles driven, 35 to 40 ft.....	13 number.
Horizontal timbers, 12 in. x 10 in.....	2 number.
Embanking.....	911,325 cu. yds.
Grading.....	28,835 sq. yds.
Grading slipway.....	4,800 sq. yds.
Concrete in quay walls.....	15,076 cu. yds.
Concrete in anchor blocks for tie rods.....	166 cu. yds.
Tie rods.....	26 number.
Reinforced concrete blocks (set No. 39).....	4,957 cu. ft.
Concrete in tunnel floor.....	264 cu. yds.
Concrete in tunnel roof.....	86 cu. yds.
Brickwork.....	250 cu. yds.
Concrete in anchor blocks for hawse pipes and roller fairlead bollards.....	270 cu. yds.
Concrete in channel behind roller fairleads.....	28 cu. yds.
Concrete around manhole covers.....	4 cu. yds.
Concrete in anchor blocks for mooring shackles.....	52 cu. yds.
Concrete in test blocks.....	40 cu. yds.
6-in. pipes for cables, set.....	4 number.
3-in. air pipes, set.....	4 number.
Ladders in face of wall.....	281 lin. ft.
Roller fairleads, set.....	9 number.
Roller fairlead bollards, set.....	8 number.
Roller fairleads for capstans only, set.....	1 number.
Double bollards, set.....	8 number.
Hawse pipes with fittings, set.....	5 number.
Manœuvring shackles and fittings, set.....	4 number.
6-in. C. I. pipes for sumps, set.....	2 number.
Iron flap doors for sumps, set.....	2 number.
Fire clay pipes through wall, set.....	120 lin. ft.
Manhole covers with frames, set.....	4 number.
18-in. hook bolts in checks for tunnel floor and sumps.....	306 number.
12-in. bolts and nuts for timber cable brackets, set.....	286 number.
Timber brackets for carrying cables, set.....	139 number.
Ladder rungs in manholes.....	28 number.
Timber rail bearers 6 in. x 10 in.....	1,752 lin. ft.
Bolts in cofferdam 12 ft. x 2½ in.....	10 number.
Bolts in cofferdam 15 ft. x 1 in.....	20 number.
Plates in cofferdam 18 in. x 6 in. x ⅝ in.....	10 number.
Temporary mooring piles.....	6 number.

ITEM NO. 14.

Diversion of Guard Pier.

Dredging	171,374 cu. yds.
Embanking.....	160,150 cu. yds.

Dredging Ship Channel.

Dredging (by H. C. M. dredges).....	2,550 cu. yds.
Dredging (by M. & F. dredges).....	72,220 cu. yds.

Dredging Generally.

Dredging.....	106,030 cu. yds.
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Dredging South Channel.

Dredging	284,050 cu. yds.
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Dredging Windmill Point Basin.

Dredging.....	1,500 cu. yds.
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Removal of Moffatt's Island Wharf.

Temporary track.....	1,950 lin. yds.
Cribwork.....	2,200 cu. ft.
Excavation.....	8,470 cu. yds.
Embanking	9,000 cu. yds.

SESSIONAL PAPER No. 21

SCHEDULE OF MEASUREMENT OF WORK EXECUTED, 1912—*Concluded.*ITEM NO. 14 *Continued.**St. Helen's Island Ferry Wharf.*

Filling by derrick.....	9,450 cu. yds.
Planking slips.....	912 sq. ft.

Wharf at Racine Pier.

Grading.....	5,103 sq. yds.
Timberwork.....	2,018 cu. ft.

Improvements to Tarte Pier.

Excavation.....	2,585 cu. yds.
Permanent way laid.....	1,151 lin. yds.
Track lifted and relaid.....	143 lin. yds.
Concrete in permanent way.....	537 cu. yds.
Filling by derrick in sheds.....	2,400 cu. yds.
Gulleys.....	4 number.
Cutting concrete base of bollards.....	16 number.
Cutting, rebuilding and replacing covers on existing man-holes.....	2 number.
Macadamizing roads.....	1,000 sq. yds.

Paving Commissioners St. Opposite Gate Openings.

Excavation.....	845 cu. yds.
Concrete bottom.....	423 cu. yds.
Paving with scoria blocks.....	2 536 sq. yds.

New Wharf at Section 25.

Dredging.....	11,575 cu. yds.
Cribs.....	758,348 cu. ft.
Filling by derrick.....	108,225 cu. yds.
Filling by city contractors.....	21,700 cu. yds.
Concrete in quay wall.....	3,612 cu. yds.
Concrete in anchor blocks.....	66 cu. yds.
Reinforced concrete blocks (set No. 28).....	3,560 cu. ft.

Track on Bickerdike Pier.

Permanent way laid.....	200 lin. yds.
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Reinforced Concrete Blocks.

Constructed (95 number).....	11,876 cu. ft.
Left in stock (14 number).....	1,780 cu. ft.

(Signed) A. D. SWAN,
Assistant Chief Engineer.

HARBOUR DREDGING.

Statement showing particulars of Cost of working the different vessels employed in Harbour Dredging in 1912.

Vessels.	Repairs and Maintenance.	Fuel.	Wages of Crews.	Proportion of salaries of staff.	Cost.	Less Credits.	Net Cost	Total Cost.	Days of Service.	Cost per day.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Dredge John Kennedy.....	9,516 53	3,652 50	11,224 61	887 59	25,281 23	.....	25,281 23	.....	355	71 21
" No. 4.....	8,050 17	2,977 50	10,471 19	779 86	22,278 72	.....	22,278 72	.....	341½	65 23
" No. 5.....	6,449 98	3,056 25	10,721 35	728 45	20,956 03	.....	20,956 03	.....	345½	60 65
" No. 6.....	5,471 79	1,563 75	4,440 00	414 18	11,890 32	.....	11,890 32	.....	148	86 16
" Premier.....	5,621 51	630 00	3,606 81	353 54	10,211 86	.....	10,211 86	.....	104	98 19
Dredges—Total.....	35,109 98	11,880 00	40,464 56	3,163 62	90,618 16	.....	90,618 16	90,618 16	1284	70 57
Floating derrick No. 1.....	8,332 97	1,931 25	9,088 75	717 26	20,070 23	1,240 00	18,830 23	.....	265	75 73
" No. 3.....	2,982 69	2,025 00	8,427 03	485 37	13,920 09	1,040 00	12,880 09	.....	332½	41 86
" No. 4.....	3,140 73	1,593 75	8,545 23	483 29	13,763 00	600 00	13,163 00	.....	368½	37 34
" No. 5.....	4,540 87	1,695 00	8,427 74	535 41	15,199 02	400 00	14,799 02	.....	337½	45 03
" No. 6.....	6,916 95	1,897 50	8,265 50	625 98	17,705 93	40 00	17,665 93	.....	325	54 47
Floating Derrick—Total.....	25,914 21	9,142 50	42,754 25	2,847 31	80,658 27	3,320 00	77,338 27	77,338 27	1628½	49 52
Tug Alphonse Racine.....	2,826 69	3,441 25	6,526 54	479 29	13,273 77	.....	13,273 77	.....	404	32 85
" Robert Mackay.....	2,146 65	3,352 50	6,485 12	449 28	12,433 55	.....	12,433 55	.....	392	31 72
" Aberdeen.....	2,719 10	3,465 00	6,392 57	469 61	13,046 28	.....	13,046 28	.....	382	34 15
" St. Peter.....	1,703 48	2,265 00	4,905 23	332 66	9,206 37	6,103 18	3,103 19	.....	392	23 48
" Courier.....	849 18	367 50	1,637 41	107 33	2,961 42	2,961 42	.....	.....	199	14 88
" No. 1.....	2,833 08	971 25	4,475 64	310 34	8,590 31	.....	8,590 31	.....	304	28 25
" Beaver.....	778 80	1,513 25	2,704 07	187 20	5,183 32	1,000 00	4,183 32	.....	197	26 31
" John Young.....	1,826 06	3,470 00	6,188 69	430 50	11,915 25	.....	11,915 25	.....	384	31 03
" Sir Hugh Allen.....	5,741 00	3,626 25	13,924 46	874 97	24,166 68	.....	24,166 68	.....	212	113 99
Tugs—Total.....	21,424 04	22,472 00	53,239 73	3,641 18	100,776 95	10,064 60	.....	90,712 35	2866	35 16
Scows and sundry plant.....	45,234 48	.....	2,551 21	739 87	48,525 56	.....	42,428 10	42,428 10	.....	.....
Drilling and blasting boats.....	5,194 04	930 00	6,983 11	275 05	13,382 20	.....	.....	13,382 20	.....	.....
Totals.....	132,876 75	44,424 50	145,992 86	10,667 03	333,961 14	19,482 06	.....	314,479 08	.....	.....

HARBOUR DREDGING.

STATEMENT showing the number of days worked by each dredge and the quantity dredged at each place in the Harbour of Montreal in 1912.

Number of Dredge.	Places at which Dredging was done.	TIME OF SERVICE.		QUANTITIES DREDGED.		Character of Material Dredged.
		Days.	Total.	Cubic Yards.	Total Yards.	
Dredge John Kennedy.	Guard pier diversion	2		1,200		Sand, silt and stones, some loose rock. Gravel, silt and clay, some hard pan. Blasted rock, some mud. Gravel and stones.
	Dry dock basin	348		427,930		
	General dredging to obtain filling	3		1,400		
	Ship Channel, north of St. Helen's island	2	355	1,950	432,480	
Dredge No. 4	Guard pier diversion	144½		170,174		Sand, silt and stones, some loose rock. Blasted rock, some mud. Sand and stones, some loose rock. Sand and stones, some loose rock.
	General dredging to obtain filling	126½		89,680		
	Market basin, sec. 20 to 23	34½		24,890		
	New wharf, sec. 24 and 25	36	341½	5,875	290,619	
Dredge No. 5	General dredging to obtain filling	28		14,950		Blasted rock, some mud. Gravel and stones. Sand and stones, some loose rock. Gravel, silt and clay, some hard pan.
	Ship Channel north of St. Helen's island	1½		600		
	Market basin, sec. 20 to 23	27		30,750		
	New channel south of St. Helen's island	277		229,250		
	Windmill point basin	6	339½	1,500	277,050	
Dredge No. 6	Dry dock basin	138		140,700		Gravel, silt and hard pan, some rock.
	New wharf, sec. 24 and 25	6	144	5,700	146,400	
Dredge Premier	New channel south of St. Helen's island	104	104	54,800	54,800	Gravel, silt and hard pan, some rock.
Grand Total			1,284	1,201,349	

GEORGE SMART,
Accountant.

HARBOUR OF MONTREAL.

STATEMENT showing the number of days worked and the quantity dredged at each place in the Harbour of Montreal in 1912.
(The quantities are cubic yards, scow measurement, and the rest includes everything except derrick work.)

Places where Dredges Worked.	Vessels.	TIME OF SERVICE.		QUANTITY DREDGED		COST PER CUBIC YD.		Total Cost.	Grand Total.	Remarks.
		Days.	Total Days.	Cubic Yards.	Total Yards.	Each Drdg Cents.	Average Cents.			
Guard pier diversion	Dredge No. 2	2		1,200		29.15		\$ 349 80	\$ c.	
	" No. 4	144½	146½	170,174	171,374	14.34	14.44	24,408 94		
Dry Dock Basin	Dredge No. 2	348		427,930		14.19		60,755 20		24,758 74
	" No. 6	138	486	140,700	568,630	18.61	15.28	26,187 92		86,943 12
General dredging to obtain filling	Dredge No. 2	3		1,400		37.47		524 70		
	" No. 4	126½		89,680		23.81		21,358 38		
	" No. 5	28	157½	14,950	106,030	30.77	24.97	4,601 52		26,484 60
Ship channel north of St. Helen's, island.	Dredge No. 2	2		1,950		17 93		349 80		
	" No. 5	1½	3½	600	2,550	41.08	23.38	246 51		596 31
Market basin, sec. 20 to 23	Dredge No. 4	34½		24,890		23.41		5,827 74		
	" No. 5	27	61½	30,750	55,640	14.43	18.44	4,437 18		10,264 92
New wharves, sec. 24-25	Dredge No. 4	36		5,875		103.50		6,081 12		
	" No. 6	6	42	5,700	11,575	19.98	62.37	1,133 04		7,220 16
New channel south of St. Helen's island	Dredge No. 5	277		229,250		19.85		45,512 18		
	" Premier	104	381	54,800	284,050	38.27	23.41	20,992 54		66,504 72
Windmill Point basin	Dredge No. 5	6	6	1,500	1,500	65.73	65.73	986 04		986 04
Grand Total			1,284		1,201,349		18.61			223,758 61

For Character of Material Dredged see Accompanying Table.

GEORGE SMART,
Accountant.

SESSIONAL PAPER No. 21

HARBOUR DREDGING.

Cost of Harbour Dredging Fleet in 1912 (including all charges for Tug, Scow and Derrick Service,—Credits for work outside of regular service not included.

Name of Dredge.	Days Service of Dredge.	COST OF DREDGES.		COST OF TUGS.		COST OF SCOWS, ETC.		COST OF DREDGE INCLUDING SCOW AND TUG SERVICE.	
		Per day of Dredge.		Per day of Dredge.		Per day of Dredge.		Per day.	
		\$	c.	\$	c.	\$	c.	\$	c.
Dredge John Kennedy.....	335	71	21	25,281	23	70	64	174	90
" No. 4.....	341½	65	23	22,278	72	70	64	168	92
" No. 5.....	345½	60	65	20,956	03	70	64	164	34
" No. 6.....	138	86	16	11,890	32	70	64	189	84
" Premier.....	104	98	19	10,211	86	70	64	201	87
Total harbour dredges.....	1,284	70	57	90,618	16	70	64	174	26
Floating derricks employed in handling material dredged.....									77,338 27
Cost of dredging fleet proper.....									301,096 88
Drilling and blasting boats employed at rock blasting.....									13,382 20
Total cost including drilling and blasting boats.....									314,479 08

GEORGE SMART,
Accountant.

List of Harbour Commissioners' Dredging Plant, 1912.

Description of Vessel.	HULL.			When Built.	ENGINES.					Capacity of Bucket.	Depth to which Dredge can work.	Remarks.	
	Length.	Breadth.	Depth.		Kind of Engine.	No. of Cylinders.	Dia. of Cylinders.	Length of Stroke.	Pressure of Steam.				
										Ft. In.	Ft. In.	Ft. In.	Inches.	Inches.	Lbs.	C.	yds.
Dredges.													
Boom spoon dredge John Kennedy.	90 0	36 0	10 3	1892	Horizontal noncondensing	2	16	18	128	7	40	Wooden hull.	
" " No. 4	90 0	36 0	10 9	1900		2	16	18	140	7	40	Steel hull.	
" " No. 5	104 0	36 0	10 9	1910		2	16	18	140	7	40	"	
" " No. 6	104 0	39 0	10 9	1912		2	16	18	140	7	50	"	
Elevator dredge Premier.	86 0	31 5	9 2	1905	Horizontal high pressure	2	14	15	.....	.....	.....	Wooden hull.
Derricks.													
Clam shell derrick No. 1.	76 0	27 6	8 0	1899	Horizontal noncondensing	2	12	14	110	.....	.....	"
" " No. 3.	76 0	27 6	8 0	1900		2	12	14	110	.....	.....	"
" " No. 4.	75 0	26 10	7 6	1892		2	12	14	110	.....	.....	"
" " No. 5.	75 0	26 10	7 6	1892		2	12	14	110	.....	.....	"
" " No. 6.	75 0	26 10	7 6	1892		2	12	14	110	.....	.....	"
Drilling and blasting boat.	80 0	27 0	5 6	1895	.....	.....	.....	.....	100	.....	.....	Three 5 in. steam drills.
Drill boat F. G. No. 1.	60 6	20 0	5 0	1909	.....	.....	.....	.....	80	.....	.....	Two 5 in. steam drills.
Tug Boats.													
Tug St. Peter.	74 8	16 1	8 6	1875	Vertical noncondensing	1	20	22	125	.....	.....	Wooden hull (rebuilt 1903)
" Courier.	36 9	9 3	6 2	1900		1	10	12	125	.....	.....	Composite hull.
" Aberdeen	79 3	18 3	9 0	1895		1	16	24	120	.....	.....	Steel hull.
" Robt. MacKay.	81 9	17 6	10 0	1899	Vertical condensing	1	32	24	125	.....	.....	"
" Alphonse Racine.	90 0	18 6	12 1	1905		1	16	24	150	.....	.....	"
" No. 1.	90 0	26 0	6 0	1893 Rebuilt		1	32	20	100	.....	.....	Iron, sheathed with elm; formerly floating elevator No. 1.

SESSIONAL PAPER No. 21

" Sir Hugh Allan	130 0	26 6	15 0	1911	Vertical triple exp's'n condensing Vertical compound condensing Vertical high pressure	3	{ 16 25 40 12 24 18 9	{ 24 18 20 10	180 140 115 125	Steel hull, twin screws. " " Wooden hull. "
" Hon. John Young	91 8	22 0	9 0	1911		2				
" Beaver.....	64 3	15 3	7 3	1892		1				
" Passe Partout.....	49 1	11 3	5 7	1912		1				
Testing boat.....	{ 73 3 73 3	14 0 14 0	Over all 3 1 3 1	1897						{ Two wooden scows, braced 16 feet apart.
Scows.										
1 Flat deck scow No. 17.....	75 0	20 2	6 0	1876	Capacity.	67½ cubic yds.				All wood.
1 " " No. 18.....	75 4	20 4	6 3	1876		67½ "				"
1 " " No. 19.....	75 6	20 3	6 5	1878		67½ "				"
1 " " No. 20.....	75 6	20 3	6 3	1878		67½ "				"
2 " " Nos. 21 and 22.....	85 0	25 0	7 5	1891		150 "				"
2 " " Nos. 23 and 24.....	85 0	25 0	6 9	1891		150 "				"
5 " " Nos. 25 to 29.....	85 0	25 0	6 9	1892		150 "				"
5 " " Nos. 31 to 35.....	85 0	25 0	6 9	1893		150 "				"
2 Dump scows Nos. 36 and 37.....	106 0	26 10	9 6	1899		200 "				"
1 Dump scow No. 38.....	106 0	26 10	9 6	1900		260 "				"
2 Flat deck Nos. 39 and 40.....	85 0	25 0	6 9	1903		150 "				"
2 " " Nos. 41 and 42.....	87 0	25 0	7 6	1904		150 "				"
3 " " Nos. 43 to 45.....	100 0	30 0	9 0	1911		250 "				"
2 Dump scows (Gilbert's).....	60 0	20 0	6 0	.....		100 "				"
2 Flat deck Nos. 46 and 47.....	100 0	30 0	9 0	1912		250 "				"

GEORGE SMART,
Accountant.

HARBOUR DREDGING -Statement showing Cost of Harbour Commissioners' Dredging by different dredges, with their proportion of Scow and Tug Service for 1912.

Vessels.	DREDGE SERVICE.	TUG SERVICE.	SCOW SERVICE AND SUNDRIES.	DREDGE WITH TUG AND SCOW SERVICE.	TIME OF SERVICE.	Cost per working day of Dredge.	QUANTITY DREDGED.	Average Cost per Cubic Yard.	Additional Cost for unloading by Derrick.	PROPORTION OF MATERIALS DREDGED	
	Cost.	Production of Cost.	Proportion of Cost.	Cost.	Days.		Cubic Yards.			Earth.	Rock.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.		\$ cts.		Cts.	Cts.	%	%
Dredge John Kennedy...	25,281 23	25,092 20	11,730 70	62,104 13	355	174 90	432,480	14 36	5 86	99 67	0 33
" No. 4	22,278 72	24,138 56	11,284 66	57,701 94	341 1/2	168 92	290,619	19 85	"	67 60	32 40
" No. 5	20,956 03	24,385 80	11,416 82	56,758 65	345 1/2	164 34	277,050	29 48	"	92 20	7 80
" No. 6	11,890 32	9,748 78	4,559 64	26,198 74	138	189 84	146,400	17 89	"	100 00	0 00
" Premier ...	10,211 86	7,347 01	3,436 28	20,995 15	104	201 87	54,800	38 31	"	98 00	2 00
Totals and averages.....	90,618 16	90,712 35	42,428 10	223,758 61	1284	174 26	1,201,349	18 62	5 86	90 15	9 85

GEORGE SMART,
Accountant.

SESSIONAL PAPER No. 21

STATEMENT showing Expenditure on Capital Account by the Engineering Department for the year ended December 31, 1912.

Harbour Extensions.

Item No. 2.—Marine tower jetty and shore quay wall—		
Part 1.—Removal of cribwork, concrete, etc..	\$ 54,211 90	
Part 2.—Elevator construction—		
J. S. Metcalf Co.'s contract.....	1,268,567 12	
		\$1,322,779 02
Item 3.—Improvement and extension of tracks—		
Embanking, subways, bridges, etc.....		89,618 23
Item 4.—New Victoria pier and Market basin—		
Excavation, quay walls, filling, grading, etc.....		148,371 52
Item 14.—Dredging and filling in general—		
Dredging south channel, altering lower end of Guard pier, dredging and blasting inside of Guard pier to obtain filling. inside of Guard pier to obtain filling..		174,494 93
Item 16.—Dry dock basin and wharfs—		
Dredging basin.....	\$ 86,943 12	
Filling and grading.....	60,604 25	
Quay walls, etc.....	248,371 73	
Total construction.....	\$ 395,919 10	
Plant.....	8,676 71	
		404,595 81
Item E.—Permanent sheds on Tarte pier—		
Shed construction.....	\$ 203,036 09	
Drains and water service.....	3,721 40	
		206,757 49
Item 5.—Permanent sheds on high level Victoria pier—		
Piling foundations.....	\$ 8,829 32	
Concrete walls and piers.....	11,862 40	
Steel superstructure.....	210,006 28	
		230,698 00
Item 7.—High level wharf, sec. 25 to 30—		
Quay walls, filling, etc.....		104,061 86
Item A.—General improvements and plant—		
St. Helen's island ferry wharf.....	\$ 1,635 94	
Wharf office building.....	11,318 71	
Dredge No. 6 (under construction).....	24,997 75	
Racine pier wharf	3,938 33	
Derrick No. 7 (under construction).....	20,870 89	
Flat scows (under construction).....	25,792 58	
Light draught tug (under construction).....	2,773 85	
Electric wiring, etc.....	4,609 61	
		95,937 66
Item B.—Terminal facilities, etc.—		
New harbour yard and engine house.....		55,104 18
Item C.—General harbour improvements. (In progress before 1910.)—		
Windmill Point wharf, filling.....	\$ 2,119 62	
Harbour Railway, siding, etc.....	38,195 16	
Dominion Coal Wharf, Hochelaga.....	448 29	
Elevator No. 1, marine tower.....	8,207 00	
Latrines and drains.....	1,547 82	
Harbour enlargement, paving.....	9,192 42	
		59,710 31
Total expenditure on capital account.....		\$2,862,129 01

GEO. SMART,
Accountant.

HARBOUR DREDGING.—Comparative Cost from 1876 to 1912, inclusive. (The quantities are scow measurement, and the cost includes handling by floating derricks.)

Years.	Cubic Yards Dredged.	Total Cost.	Cost per Cubic Yard.	Kind of dredges employed.
		\$	Cts.	
1876*	156,082	55,462	35·50	
1877	173,499	45,103	26·00	
1878	211,731	48,748	23·00	
1879	189,609	41,006	21·63	
1880	186,430	46,914	25·16	
1881	170,764	54,128	31·69	
1882	187,339	53,598	28·60	Spoon dredges and stone-lifters.
	9,429	13,254	\$1.40·60	Elevator dredges.
	196,768	66,852	33·96	Totals and average.
1883.	36,358	17,956	49·38	Spoon dredges and stone-lifters.
	6,990	19,385	\$2.77·30	Elevator dredges—lifting rock and boulders and clearing up.
	43,348	37,341	86·14	Totals and average.
1884	125,648	49,468	39·37	Spoon dredges and stone-lifter.
1885	69,494	28,563	41·10	" "
1886	57,728	25,772	44·00	" "
1887	36,393	23,259	62·00	" "
1888.	73,150	36,690	50·16	" "
	2,077	1,333	64·18	Elevator dredges.
	75,227	38,023	50·54	Totals and average.
1889	205,283	54,574	26·58	Spoon dredges and stone-lifters.
	9,420	2,996	31·80	Elevator dredge.
	214,703	57,570	26·81	Totals and average.
1990	186,670	53,674	28·60	Spoon dredges and stone-lifters.
1891	259,267	49,571	19·12	Spoon dredges.
	43,290	14,232	32·87	Elevator dredges.
	302,557	63,803	21·08	Totals and average.
1892	361,947	93,595	25·58	Spoon dredges.
1893	235,280	93,050	39·55	"
1894	312,430	98,858	31·64	"
1895	496,528	99,400	20·02	"
1896	401,938	103,317	25·70	"
1897	284,844	68,211	23·95	"
1898	456,458	61,012	13·37	"
1899	963,131	100,163	10·77	"
1900†	1,323,871	163,541	12·25	"
1901	1,359,221	190,242	14·00	"
1902	1,179,726	217,986	18·48	"
1903	854,510	226,736	26·53	"
1904	810,723	247,914	30·58	"
1905	324,187	141,059	43·51	"
1906	246,525	113,749	45·94	"
1907	257,321	112,611	43·76	"
1908	186,873	106,115	51·40	"
1909	233,535	92,294	39·52	"
1910	794,994	168,218	21·17	"
1911	1,364,797	271,839	19·92	" and 1 elevator do.
1912	1,201,349	301,097	25·02	" "

*From 1876 to 1899 interest and depreciation are not included in cost as given here.

†From 1900 to 1906 includes depreciation and every expense except interest.

GEORGE SMART,
Accountant.

SESSIONAL PAPER No. 21

QUEBEC HARBOUR COMMISSIONERS' REPORT FOR THE YEAR 1912,
UNDER THE QUEBEC HARBOUR COMMISSIONERS' ACT, 1899.

QUEBEC, January 2, 1913.

To the Honourable

J. D. HAZEN, M.P., P.C.,

Minister of Marine and Fisheries,
Ottawa.

SIR,—In compliance with the requirements of the Act 62-63 Victoria, chapter 34, section 46 (the Quebec Harbour Commissioners' Act, 1899), I have the honour to submit the following report on the operations of the Quebec Harbour Commissioners for the year 1912.

CHIEF ENGINEER'S REPORT.

The annexed report from the chief engineer, Mr. St. Geo. Boswell, conveys information regarding all matters coming under his care in connection with the harbour works in general, and the various additions, alterations and reparations made to them, and the minor works executed during the year on the properties of the commissioners.

WHARFINGER'S REPORT.

The annexed report from the wharfinger, Mr. P. Flynn, gives the usual information regarding the number of vessels using Louise docks, the goods landed or shipped on the wharfs, and the railway traffic over the commissioners' property during the year 1912.

HARBOUR MASTER'S REPORT.

The annexed report from the harbour master, Mr. J. C. Sullivan, contains the usual data concerning the opening and closing of navigation, the formation of ice, and the routine work of his department.

PREMISES LEASED.

The leases of the following tenants have been renewed for one year, all subject to cancellation after three months' notice if any of the properties leased are required for harbour improvements. Canadian Import Company, coal yard on the northern part of the embankment; Messrs. Madden & Son, coal yard on the northern part of the embankment; Quebec and Lake St. John Railway Company, riparian rights; Messrs. J. B. Renaud & Co., registered, brick building on the embankment; Quebec Railway Light, Heat and Power Company, wood yard on the embankment; Mr. J. Emilio Lachance, coal yard on the embankment; Messrs. F. H. Andrews & Son, registered, store No. 4; La Société St. Vincent de Paul, store No. 7; Messrs. J. L. Lachance, Limitée, coal space on the embankment.

The lease of Grand Trunk and Wellington wharfs was continued for one year in favour of the Grand Trunk Railway system, to be used as their freight terminal.

REVENUE AND EXPENDITURE.

The revenue of the commissioners for the year 1912 has been \$126,131.39, or an increase over the preceding year of \$3,705.58.

CONSTITUTION OF THE BOARD CHANGED.

By an Act of Parliament, 2 George V, chapter 44, entitled 'An Act to amend the Quebec Harbour Commissioners' Act, 1899,' sections 7, 8, 9, 10, 11, 12, 13, 15 and 16

4 GEORGE V., A. 1914

of the 62-63 Victoria, chapter 34 were repealed and the following sections were enacted as sections 7, 8, 9 and 10:—

‘7. The corporation shall consist of three commissioners, appointed by the Governor in Council upon the recommendation of the Minister of Marine and Fisheries, and they shall hold office during pleasure.

‘8. Two commissioners shall be a quorum. If a quorum be present and act, vacancies in the corporation shall not prevent or impair the effect of such action. It shall not be necessary for more than two commissioners to sign any debenture, bond or other security that may be issued by the commissioners.

‘9. The Governor in Council may, from time to time, appoint one of the said commissioners as president of the corporation.

‘10. The president and the other commissioners may be paid, out of the revenue of the harbour, such remuneration for their services as the Governor in Council determines.’

In conformity with section 2 of the Act, a proclamation was issued by the Governor General, on the 11th October, putting the law into force, and the members of the Board of the Quebec Harbour Commissioners as then constituted automatically ceased to be in office. They were Messrs. Victor Chateauvert, chairman, Lorne C. Webster, W. M. Dobell, S. C. Auger, W. A. Marsh, J. B. E. Letellier, John S. Thom, and W. M. Macpherson.

By an Order in Council dated October 18, 1912, Messrs. William Price, J. B. E. Letellier, A. S. Gravel, were appointed commissioners, Mr. William Price being appointed chairman.

The members of the new board were sworn into office and subscribed the oath of allegiance at the hands of the secretary-treasurer on the 19th of October, and afterwards held their first meeting.

TENDERS.

Public tenders were called for through the press and trade journals for:—

1. The erection of a one million bushel capacity grain elevator to be erected on the Princess Louise embankment. The tender called for a modern and fireproof building, with necessary adjuncts, and so constructed as to permit the addition to it, if required, of storage tanks of one million bushel capacity.

2. For dredging from 2,500,000 to 3,000,000 cubic yards at the estuary of the river St. Charles for the construction of a bulkhead retaining wall parallel to the embankment.

3. For the construction of a 50-ton floating steam crane.

HANDLING OF RAILWAY CARS.

The railway traffic and the switching of cars on the commissioners' tracks have been done so far, respectively, by the railway companies having access to the harbour tracks and harbour lines. With the increasing traffic on the docks the service was not satisfactory, and the public had serious grounds for complaint. In order to give equal facilities to all railways and treat all traffic on the same footing, the commissioners have decided to undertake the shunting of all cars coming on their railway lines and sidings, and they have ordered for that service three strong switching locomotives.

So that their powers to operate locomotives may not be contested, they have applied for an amendment to section 22 of their Act, which amendment will define more clearly their powers in that respect.

SESSIONAL PAPER No. 21

FLOATING CRANE.

Tenders were called for the construction of a 50-ton capacity floating crane, the following firms offering bids: George Russell & Co., John Reid & Co., Cowans, Sheldon & Co., Stothert & Pett, Sir William Arrol & Co., Ltd., Bossé and Bank, Mussens, Limited, Vickers, Limited.

The contract was awarded to Sir William Arrol & Co., Limited, the crane to be delivered, complete, in September, 1913.

RAILWAY FREIGHT TERMINALS.

To provide facilities for the handling of the freight coming by the railways of the south shore, the commissioners, after conferring with the Grand Trunk, Inter-colonial and Quebec Central Railway officials, have ordered the construction of a berth for the car ferry, the laying out of several service tracks and the erection of two modern freight sheds. Preliminary work on this improvement was made last fall, and as soon as the season permits, work will be resumed in the spring when it will be pushed to completion.

ICE CUTTING.

During the winter of 1911-12, 111,275 blocks of ice have been cut for local use.

Care has been taken that all this ice that is cut for domestic purposes is perfectly pure and taken in localities in the harbour that have been selected after an analysis of the ice had been made.

To this report are annexed the various statements conveying the information yearly forwarded to your department in connection with the harbour, and also a complete statement of the commissioners' accounts for the year.

I have the honour to be, sir,
Your most obedient servant,

RAOUL RENAULT,
Secretary-Treasurer.

HARBOUR ENGINEER'S OFFICE,
QUEBEC, January 7, 1913.

RAOUL RENAULT, Esq.,
Secretary-Treasurer,
Harbour Commission,
Quebec.

SIR,—I have the honour to submit herewith the following, with reference to the various works in connection with the maintenance and improvement of the harbour accommodation, carried out by this department during the past year.

STRAUSS RAILWAY BASCULE BRIDGE.

This bridge was completed and ready for operation on the 11th of April last; the first train crossed over the bridge on April 10 last.

LANDING SHED.

A landing shed, 960 by 80 feet, has been erected on the west frontage of pier No. 1, and the necessary railway serving lines, some 4,000 feet in length, have been laid down along the shore side of the shed.

SITE FOR NEW IMMIGRATION BUILDING.

To make room for the new immigration building, the shed No. 22 has been removed, and partially re-erected on a site just west of the commissioners' grain elevator No. 1; the cross-over railway line, connecting the main with the line along the northern cribwork, has also been taken up, and a new cross-over laid down west of the commissioners' elevator No. 1.

The landing shed No. 25 has been raised up $1\frac{1}{2}$ feet, and the plank roadway on pier No. 1 lowered to correspond with the levels of the railway lines; this work necessitated the removal of some 5,000 cubic yards of sand from the surface of the pier.

Electric lights have been installed inside and along the river face of the new shed No. 27, and four street lamps placed along the planked roadway. A site for a 1,000,000-bushel grain elevator has been selected on the embankment, with provision for a future extension of an additional 1,000,000 storage capacity. Plans and tenders have been received for the construction of this elevator which are now receiving the consideration of the commission.

A contract has been entered into with the firm of Sir Wm. Arrol & Company, for the construction of a 50-ton floating crane; and with the Montreal Locomotive Works for the supply of three powerful shunting locomotives, it being the intention of the commissioners to operate their own railway lines in the future.

The foundations for an office building, 60 by 80 feet, for the accommodation of the commission are now being prepared on the site formerly occupied by the Canadian Northern elevator.

The water service has been extended down the river face of pier No. 1, so as to furnish water to vessels at the berth opposite shed No. 25.

An additional railway cross-over has been placed in the main line opposite the commissioners' shop, and a crane track for the accommodation of the Union Sand Company laid down opposite their lot at the western end of the embankment.

To provide additional landing space for anthracite coal, the railway cross-over from the main line to the line along the northern cribwork at the western end of the embankment, has been removed and a new one laid down farther east; this change has added some 24,000 square feet to the area available for the landing of hard coal.

One of the coal towers forming part of the coal discharging plant belonging to the St. Lawrence Stevedoring Co., having been recently destroyed by fire, the company intend replacing it by two towers of equal capacity.

CHANGE IN CAR FERRY BERTH.

The new berth for the car ferry in the slip at Atkinson's wharf, has been dredged out and the landing pier constructed, ready for the laying down of the railway lines in the spring.

The remains of the old fire station have been removed, and the various buildings occupying the site of the new terminals in connection with the car ferry, are being demolished as they become vacant.

Plans for the freight sheds, to be erected for the accommodation of the railway companies making use of the car ferry, have been prepared; these buildings will be put under construction as soon as the season permits.

To give a more open entrance to the custom house pond, for vessels berthing at the pontoon, the East India wharf and the sewer wharf have been cut off in line with the face of the pontoon, making an entrance of 130 feet wide as against the former width of 90 feet, the slip between the East India and the Custom-house wharfs has been closed with a retaining crib, and filled in, and the Q.H.C. store No. 16 has been demolished.

SESSIONAL PAPER No. 21

The small sheds on the custom-house pontoon have been extended so as to form a covering for the entire pontoon.

Seven round floating fenders, for use on the river front of the breakwater and pier No. 1, were constructed during the past winter.

The minor repairs and removals, required to maintain the various properties of the commission in a good and efficient condition, have been effected.

The cross wall drawbridge was operated for the first time the past season on April 10, and for the last time on December 10.

The water was retained in the wet dock for the first time for the season on April 29, and for the last time on November 4.

The entrance gates to the wet dock were not opened at the mid-day tide of October 18, the tide not having risen sufficiently for the purpose.

I have the honour to be, sir,
Your obedient servant,

ST. GEO. BOSWELL,
Chief Engineer.

QUEBEC, February 1, 1913.

RAOUL RENAULT, Esq.,
Secretary-Treasurer, Quebec Harbour Commissioners,
Quebec.

SIR,—I have the honour to submit the following with reference to the traffic of the St. Charles docks and wharfs, showing the number of vessels, their registered tonnage, amount and description of cargo landed and shipped from the docks during season 1912—

Inwards, 423 vessels, 1,842,188 tons register—

82,239	tons	general cargo.
6,937	"	salt.
2,559	"	bricks.
6,861	"	molasses.
302	"	cement.
2,379	"	slag.
240	"	drain pipes.
273	"	earthenware.
52	"	mill stones.
2,474	"	whitening.
235,969	"	bituminous coal.
52,866	"	anthracite coal.
<hr/>		
393,151		

Outwards, 98 vessels, 350,571 tons register.—

23,300	tons	general cargo.
1,032	"	asbestos.
2,861	"	wood pulp.
270	"	pulp board.
<hr/>		
27,463		
30,261	P.S. lumber and timber.	

Lower port steamers.—

Landed 633 tons general cargo.
“ 6,135 “ pulp.
Shipped 5,531 tons general cargo.

Grain landed—

	Bushels.
Oats..	623,625
Corn..	100,435
Peas..	276
Wheat..	10,229
	<hr/>
	734,565

Ties landed by schooners and bateaux—

11,300 pcs. railway ties.

Pulpwood shipped by propellers—

6,014 cords of pulpwood.

The surface traffic has required the employment of 21,804 railway cars.

During the past season the different mail steamers landed:—

First-class passengers..	9,671
Second-class passengers	51,850
Third-class passengers..	124,142
	<hr/>
Total..	185,663

The second and third-class passengers were forwarded to their future homes by the different railway companies.

VESSELS DAMAGED AND USING THE DOCKS.

SS. *Manchester Importer*, went ashore at White island, came back for survey, found to be sea-worthy, and proceeded to sea.

SS. *Empress of Britain*, after being in collision with ss. *Helvetia*, off Fame point, came back to Quebec, discharged a part of her cargo, received a temporary repair, reloaded, and went to sea.

SS. *Bengore Head* went ashore on straits of Belle Isle, came back to Quebec, discharged her cargo, went into dry dock at Lévis, reloaded and went to sea.

SS. *Bellona* went ashore at Traverse, came up to Quebec, discharged her full cargo, went over to dry-dock at Lévis, came back to Louise basin to winter.

SS. *Gladstone*, loaded with coal, went ashore near St. Patrick's hole; came up to Quebec landing the balance of her coal, went over to Levis docks and proceeded to Halifax for permanent repairs.

SS. *Royal George*, inward bound from Bristol, went ashore on the island of Orleans. When floated, came up to Quebec, discharged her cargo, made temporary repairs. Shipped a part cargo of lumber and timber and proceeded to Halifax for permanent repairs.

During the year spaces were rented at low rate for storage of coal landed, which had to be removed from water front.

The Dominion Coal Company have 5,300 tons of coal stored on space rented to them.

The Nova Scotia Steel and Coal Company have 18,000 tons of coal stored on space rented to them.

SESSIONAL PAPER No. 21

There are wintering on Louise docks, lumber, coal, railway ties, timber, etc., etc.

There are stored in the different freight sheds, salt, slag, etc., etc.

The docks are occupied during the winter months by a large number of vessels of various tonnages, where they find safe quarters until the opening of navigation.

I have the honour to be, sir,

Your most obedient servant,

P. FLYNN,

Wharfinger.

QUEBEC, January 3, 1913.

RAOUL RENAULT, Esq.,

Secretary-Treasurer,

Harbour Commission,

Quebec.

SIR,—I have the honour to submit the following with reference to the harbour for the year 1912:—

Navigation was open all winter, ferries crossing the river and the C.G.S. *Montcalm* working in the harbour.

The ice bridge formed at Cap Rouge on the 12th of January.

The ice bridge in the North channel between the island of Orleans and the mainland formed on the 13th January.

C.G.S. *Montcalm* left the harbour on the 9th February, at 5.30 a.m., for lower St. Lawrence, and returned on the 14th of the same month.

C.G.S. *Montcalm* left for the lower St. Lawrence with passengers and freight on the 16th March, and returned on the 19th of the same month.

SS. *Aranmore* and SS. *Natashquan* left the harbour with passengers and freight for lower St. Lawrence on the 29th March and returned on the 6th of April.

Tug *Escoumains* arrived from lower St. Lawrence on the 9th April.

Tug *Tiger* arrived from lower St. Lawrence on the 12th April.

Navigation was general with schooners and small craft between Quebec and lower St. Lawrence on the 13th of April.

Ice in the tidal basin broke up on 14th April.

Ice in the wet dock broke up on the 16th April.

The ice in the St. Charles river broke up on the 25th April.

SS. *Zicton*, first passenger and freight steamer from sea (Europe) arrived in the harbour, and berthed in the Louise basin, on the 28th April.

Cap Rouge ice broke up and passed down on the 28th April.

SS. *Pretorian*, Allan Line, with passengers and freight, arrived in the harbour on the 1st May.

All pontoons were placed in the harbour on the 2nd May.

SS. *Wacousta*, first coal laden steamer, arrived in the harbour on the 1st May.

First Richelieu and Ontario Navigation Co. steamer *Saguenay* arrived from Montreal on 2nd May, and returned same evening.

First Richelieu and Ontario Navigation Co. steamer *Tadousac* left for the Saguenay on the 5th May.

First passenger steamer Allan Line Royal Mail Line ss. *Pretorian* left for sea with passengers and freight on the 6th May.

H.M.S. *Cornwall* arrived and anchored in the harbour on the 24th of May, and left on the 5th June for sea.

One ship discharged five hundred and fifty (550) tons of ballast (nickel slag) on the Louise dock.

4 GEORGE V., A. 1914

In addition to the routine work of the office and harbour, seven hundred and ninety-seven (797) ocean and sea-going steamers have been berthed in the Louise docks, breakwater and Point à Carcy wharfs.

One of the most important parts of the work of the harbour is the berthing of those vessels which is done during the night as well as the day time.

These docks and wharfs have also accommodated a large number of passenger boats, coal barges, etc., etc.

The limits of the clear water space opposite the city where the telegraph and telephone cables are laid are indicated by red lights at night and sign-boards in day time at both sides of the river. This space is 1,200 feet.

The French cruiser *Descartes* arrived in port and anchored in the harbour on the 18th September and left on the 27th September.

SS. *Empress of Britain*, after being in collision, returned to port in a damaged condition on 29th July, was berthed and temporarily repaired at the breakwater and proceeded to sea on the 7th August.

SS. *Royal George*, Canadian Northern Steamships, Limited, after having been ashore, arrived in the harbour on November 23, and after being temporarily repaired in the Louise basin proceeded to Halifax on December 12.

SS. *Bellona*, after having been ashore, returned to the harbour on November 6, and after discharging cargo on the Louise dock, entered Lévis dry-dock for temporary repairs, and is now anchored in the Louise basin for the winter.

SS. *Virginian*, Allan Royal Mail Line, left the harbour on November 22, with passengers and mails for sea.

Steamer *Tadousac*, last Richelieu and Ontario Navigation Company passenger steamer, arrived from Saguenay on November 22.

The last Richelieu and Ontario Navigation Company passenger steamer *St. Irénée*, left for Montreal on November 26.

SS. *Royal George*, Canadian Northern Steamship Company, left the harbour on December 12 for Halifax at 7 a.m.

C.G.S. *Montmagny* left the harbour with passengers and freight on December 12 at 7 a.m. for Halifax.

The ice in the wet dock formed on December 9.

C.G.S. *Montcalm* left the harbour for lower St. Lawrence on February 9, 5.20 a.m., for Seven islands, returned on the 14th.

The ice in the tidal basin formed on December 24.

The ice in the St. Charles river formed on December 28.

SS. *Montcalm* left for lower St. Lawrence March 16, returned 19th.

Notices have been posted in suitable places warning parties from discharging rubbish of every kind into the harbour, docks, &c., and every precaution is being taken to prevent any violation of the regulations of the commissioners in that respect.

The wet dock and tidal basin are now taken up with a large number of steamers, &c., for the winter, but enough space is reserved for any ocean steamers that may come up in the early spring.

C.G.S. *Montcalm* and C.G.S. *Lady Grey* have taken their places in the Louise basin and Point-à-Carcy wharf and are daily working at the ice at Cap Rouge.

Up to the time of writing the ice in the north channel between the island of Orleans and the mainland, and at Cap Rouge had not formed.

I have the honour to be, sir,

Your obedient servant,

JAS. C. SULLIVAN,

Harbour Master.

SESSIONAL PAPER No. 21

EXPENDITURE on Capital Account during the year 1912.

Office furniture.....	\$ 540 92
Tools account.....	520 91
Lumber account.....	4,296 79
Atkinson's wharf.....	12,053 00
East India wharf.....	38,501 78
Louise docks and wharfs.....	27,084 44
Derrick.....	1,165 97
Grain elevator No. 2.....	1,078 46
Fire station No. 5.....	738 92
New office buildings.....	155 70
Shed No. 25.....	4,040 53
Railway bridge.....	12,125 52
Custom house pontoon.....	1,222 61
Pier No. 2.....	223 36
Shed No. 22.....	7,516 28
Shed No. 27.....	27,179 64
Pier No. 1.....	2,469 61
Expert engineering.....	55 28
	<u>\$141,002 10</u>

COMPARATIVE STATEMENT OF THE REVENUE OF THE QUEBEC HARBOUR COMMISSIONERS
FOR THE YEARS 1911 AND 1912.

	1911.	1912.	Difference in 1912.
Tonnage dues.....	\$13,314 71	\$11,138 08	\$2,176 63 Decrease.
Import dues.....	5,801 53	9,459 29	3,657 76 Increase.
Export dues.....	2,145 10	4,160 46	2,015 36 Increase.
Harbour dues.....	3,787 24	4,006 16	218 88 Increase.
Earning of docks wharves and stores.....	93,604 88	88,757 12	4,827 76 Decrease.
Beach and deep water lots.....	1,725 37	1,560 40	164 97 Decrease.
Interest.....	2,016 98	6,979 77	4,962 79 Increase.
Sundries.....	30 00	70 15	40 15 Increase.
	<u>122,425 81</u>	<u>126,131 39</u>	<u>3,705 58 Increase.</u>

REVENUE AND EXPENDITURE.

1912 Dec. 31		1912 Dec. 31	
To Harbour dues..... Tonnage dues..... Export dues..... Import dues.....	\$ 4,006 12 11,138 08 4,160 46 9,459 29	By administering engineering staff, salaries and fees.....	\$15,061 20
		Legal expenditure.....	3,667 87
		Notarial expenditure.....	61 15
		Miscellaneous expenses, printing, stationery, advertising, harbour master service, general labour, etc.....	4,325 54
		\$28,763 95	
WAREHOUSE AND PROPERTY EARNINGS.			
To Wellington wharf..... Grand Trunk wharf..... Atkinson's wharf..... East India wharf..... Reynars wharf..... Louise docks and wharfs.....	\$ 1,970 00 2,000 00 2,133 33 2,595 40 1,200 00 78,858 39	Workman's liability.....	54,293 65
		Twelve months' interest on Bonds 62-63 Victoria, chapter 34, and 6-7 Edward VII, chapter 36....	545 19
		Surplus over the working expenses.....	46,000 00
			2,176 79
			\$88,757 12
Beach and deep water lots..... Interest..... Sundries.....	1,560 40 6,979 77 70 15		
		\$186,131 39	\$126,131 39

SESSIONAL PAPER No. 21

The arrears of interest due to or by the Dominion Government is not included in this statement.

QUEBEC HARBOUR COMMISSIONERS' OFFICE.

QUEBEC, January 2, 1912.

RAOUL RENAULT,

Secretary-Treasurer

We hereby certify that we have examined the statement of assets and liabilities of the Quebec Harbour Commissioners and we find the same in all particulars the true position of the Trust to the 31st December, 1912, as per books and vouchers.

QUEBEC, January 15, 1913.

J. ARTHUR LARUE,
ARTHUR A. SCOTT,

Auditors.

4 GEORGE V., A. 1914

EXPENDITURE on Capital Account during the year 1912.

Office furniture.....	\$ 540 92
Tools account.....	520 91
Lumber account.....	4,296 79
Atkinson's wharf.....	12,053 00
East India wharf.....	38,501 78
Louise docks and wharfs.....	27,084 44
Derrick.....	1,165 97
Grain elevator No. 2.....	1,078 46
Fire station No. 5.....	738 92
New office buildings.....	155 70
Shed No. 25.....	4,040 53
Railway bridge.....	12,125 52
Custom house pontoon.....	1,222 61
Pier No. 2.....	223 36
Shed No. 22.....	7,516 28
Shed No. 27.....	27,179 64
Pier No. 1.....	2,469 61
Expert engineering.....	55 28
	<hr/>
	\$141,002 10
	<hr/>

RAOUL RENAULT,
Secretary Treasurer.

ANNUAL REPORT OF TORONTO HARBOUR COMMISSION FOR 1912.

Hon. J. D. HAZEN,
Minister of Marine and Fisheries.

SIR,—I have the honour to submit the annual report of Toronto Harbour Commissioners for the year ending December 31, 1912.

ALEX. C. LEWIS,
Secretary of Toronto Harbour Commission.

Mr. LIONEL H. CLARKE, Chairman,
and members of the Toronto Harbour Commission,
Toronto, Ont.

GENTLEMEN,—I have the honour to present herewith my report of the operations carried on under authority of your board during the year 1912, including the report of the engineer of the work done by the engineering staff and the report of the harbour master of the arrival and departure of vessels, and of other classes of work under his jurisdiction.

This is the first annual report since the formation of the new Board of Harbour Commissioners for Toronto, under authority of the Toronto Harbour Commissioners' Act of 1911, and is necessarily very much in the nature of a review of the organization work necessary in the preparation for the large task of harbour and water-front development which the commissioners have undertaken.

The Act of the Dominion Government incorporating the new board and defining its powers became law on May 19, 1911, and was followed by an Act of the Provincial Government of Ontario empowering the city of Toronto to convey to the harbour commissioners the property known as Ashbridge bay and other water-front properties belonging to the city, under any conditions the city desired to impose, at the time of the transfer.

The city council took advantage of this authority, and by deed dated December 26, 1911, transferred to the Harbour Commissioners all of the district known as 'Ashbridge bay,' the water lots owned by the city on the inner water-front, with the exception of the corporation yard at the foot of Princess street and the waterworks property at the foot of John street, and the water lots on the lake front, from

SESSIONAL PAPER No. 21

Bathurst street to the Humber river, with the exception of 19 acres of water lots in front of the exhibition grounds, lying immediately to the east of Dufferin street. The commissioners have since applied to the Department of Marine and Fisheries at Ottawa for a patent of this water lot, in order to complete their control of the water-front, and will probably become owners of this property in a very short time.

On January 5, 1912, the commissioners formally approved the terms of transfer of the land from the city; and the deed was thereupon executed by both parties and registered in the city registry office.

On January 16, 1912, Mr. E. L. Cousins, who was then engineer-in-charge of the civic department of railways, bridges and docks, was appointed by the commissioners as their chief engineer and was authorized to engage the necessary staff and proceed with the work of securing the data needed as the basis for proper plans for the development of the harbour and improvement of the water-front.

Permission was secured from the Minister of Public Works; and Mr. J. G. Sing, engineer-in-charge of Government works at Toronto, was secured as consulting engineer.

On March 19, I was appointed to the position of secretary, and Mr. Colin W. Postlethwaite, who for many years acted as harbour master and secretary to the former board, was retained as harbour master. An office staff was employed, and the work of organizing a system to handle the property of the commission and to transact the many different lines of business upon it was commenced.

DOCK PROPERTIES.

When the commissioners assumed control of the water-front properties, it was found that the leases covering the harbour square wharfs, west of the foot of Bay street, and the wharf occupied by the Turbinia company, east of the ferry wharfs, expired in March, 1912, and that it was necessary to arrange new leases for these properties.

The wharf and freight-shed on the east side of harbour square had been under lease to the 'Inland Lines, Limited.' The wharf and freight shed on the west side of the same dock had been under lease to the Canadian 'Lake Transportation Company,' while the south face of this dock had been leased to the 'Toronto Ferry Co.' as a mooring place for their boats, when not in use.

As there was not time to formulate a policy in connection with the leasing of these wharfs, and it was impossible to say what disposition of these properties might be rendered necessary by any new plans of development which might be proposed, the commissioners arranged with the two tenants of the east and west freight sheds to continue their occupancy for another year, expiring on the 15th of March, 1913.

The Turbinia Steamship Company, having amalgamated with the Niagara Navigation Company, did not wish to renew their lease of the dock which has been occupied by them, and as the Toronto Ferry Company was very much cramped for room, on their docks, this company was given a lease of the Turbinia wharf at a rental of \$2,000 a year, lease to expire on December 20, 1915, at the same time as the lease of their other property.

This left the south face of harbour square free and it was afterward leased to the Argyle Steamship Company and upon the winding up of that company, the lease was transferred to the People's Steamboat Company.

There had not been, for some years, any lease from the city under which the ferry company used the ferry docks at Island Park, but they had paid \$500 a year for this privilege, and this was continued for the season of 1912.

The dock at Wards island had been used by the company free of charge from the time they commenced their Wards island service, but in order to render this

4 GEORGE V., A. 1914

dock safe for public use it was found necessary to completely re-build the upper portion of it at a cost of \$1,200, and an arrangement was made under which the ferry company agreed to a rental equal to 10 per cent of this amount, or \$120 per year, for the use of the dock.

The particular expenditures in the way of repairs to the various docks are mentioned in the report of the engineer.

LIFE SAVING.

When the water-front properties were transferred to the Harbour Commissioners, the duty of placing and supervising the life-saving appliances on the water-front and island was also assumed by the Board, and sets of appliances consisting of life buoys, pike poles and ladders were placed at accessible points along the water-front and on the island for use in case of accidents on the water. Two inspectors were placed in charge of this work, one on mainland and once on the island under the supervision of Mr. Allen, the deputy harbour-master.

Early in March, Commander Henry Thompson, R.N., superintendent of life-saving service for the Dominion Government discussed with the commissioners the possibility of making a joint arrangement for the support of a life-saving crew. Commander Thompson was urging upon his superiors the wisdom of establishing a permanent crew for Toronto, and felt that such a step could be better justified if the crew had some constant duties to perform rather than to be simply on duty ready for emergencies in the lake outside the island.

On March 27, Commander Thompson submitted a plan for the formation of a crew which would have charge of the Government life saving and would also undertake the work of patrolling the harbour, formerly done by the police patrol, and the supervision of the life-saving apparatus newly undertaken by the commission. As a result of this conference, an arrangement was made under which the Dominion Government undertook to provide a proper life-saving station and maintain a crew for the purpose above mentioned, upon the condition that the commissioners contribute annually the sum of \$3,035 towards its maintenance.

The crew was organized and on duty during the navigation season of 1912, and Commander Thompson has recommended to the Department of Marine and Fisheries a considerable extension to this service in Toronto harbour for the season of 1913. During the winter season the captain of the life-boat crew is charged with the duty of marking the weak spots in the ice on the bay.

In addition to the placing of life-saving apparatus, the commissioners secured 200 copies of an illustrated chart prepared by Captain Demers, of the Toronto Swimming Club, giving instructions in the art of rescuing drowning persons and resuscitating the apparently drowned; and framed copies of this chart were placed on the majority of passenger steamers plying out of Toronto harbour, as well as on the ferry boats and at many prominent points along the waterfront.

RULES AND REGULATIONS.

Early in the year a new set of regulations governing traffic in the harbour was prepared and approved by the commissioners and by the Governor in Council. Those regulations govern the operation of all classes of boats in the harbour from the smallest pleasure craft to the largest passenger and freight steamers and, amongst other things provided, that every craft while within the harbour limits must carry certain specified lights. These new regulations were made effective in May, and were enforced throughout the season to the extent of the ability of our staff, assisted by the Government life-saving crew, with the result that a great improvement in the conduct of small boat owners was noticeable.

SESSIONAL PAPER No. 21

The new regulations were printed in a small pamphlet and a sufficient number of copies was sent to each of the aquatic clubs in the city for distribution to their members; while individual boat owners, desiring to secure copies, were supplied direct from this office, upon application.

REMOVAL OF SAND.

In the course of his investigation of the class of material underlying the waters of the harbour which would be available for reclaiming land in the Ashbridge bay district, the engineer found that, contrary to general belief, the supply of sand in the inner harbour was limited, there being only some 3,000,000 cubic yards of sand out of a total of 17,000,000 cubic yards of material which would be available for filling purposes. As a result of this discovery the board decided that it could not permit the removal of any further sand from the bed of the harbour by private parties, and established a rule that after the end of the year 1912 no more sand would be so removed.

The date was set for the end of the year in order to deal fairly with the Sand and Supplies, Limited, as this company had made its contracts with its customers for the year 1912, on the basis that they would be able to secure the sand from the harbour as in former years. The company was notified that, after the end of the year, no further dredging operation on their part would be allowed and the notice was repeated at the end of December in order to emphasize it.

PROPERTY.

At the time of the transfer by the city to the harbour commission, of the waterfront properties owned by the former, these properties, including those portions of Ashbridge bay which are entered on the assessment roll were valued at \$2,259,809. A valuation on the same basis by the assessment department, of the remaining portions of the Ashbridge bay property added the sum of \$677,875, making a total valuation of \$2,937,684.

This property has since been valued, along with other properties which were owned by the former harbour board at the sum of \$8,794,924 which is practically the value of the commissioners' assets to-day, exclusives of office furniture.

From the city property, at the time of the transfer, there was derived a revenue of \$52,514.54, the greater portion of this revenue being rental paid for the central dock properties and ground rent from the lessees of various land and water lots on the south side of the esplanade between Yonge street and Berkeley street.

In the Ashbridge bay district there were three tenants holding leases from the city and contributing altogether an annual rental of \$1,761.80.

In addition to these, Mr. David Elliott had practically constructed buildings on a lot in the district of which he expected to secure a lease. Mr. Elliott disagreed with some of the terms of the lease prepared by the city, with the result that he did not become a leaseholder. When the commissioners took over the property the disagreement continued with the result that negotiations were abandoned by us and the idea of making a lease with Mr. Elliott was dropped. Later in the year, when the plans for the development of the district were completed, it was found that it would be necessary to have Mr. Elliott's buildings removed entirely from the property; and he was given notice to this effect on August 28, with the result that he discontinued building operations and is now negotiating through his lawyers for some compensation for the same. The annual rental paid by Mr. Elliott was \$240.

INDUSTRIAL PROSPECTS.

In the early stages of the preparation of plans for the improvement of the Ashbridge bay district the commissioners changed the name of this property and decided

4 GEORGE V., A. 1914

to call it 'The Toronto Harbour Industrial District' and it has since been referred to under this name in all our literature.

Although there was very little land in the district available for 1912 and the only entrance was by means of Cherry street, with all the drawback of roads which had been badly damaged through the construction of the low level interceptor sewer, the inquiries for locations by new industries have been so active as to indicate a very bright future for the district, when the work of reclamation is actively commenced.

During the year, two new leases were made, one to MacIver Bros. of a lot lying to the west of the present Don outlet and north of Keatings cut. This block contains 1.62 acres and was leased on a basis of \$10,000 per acre, the lessees paying 5 per cent per annum, or \$810 yearly rental for the lot upon which they are erecting a factory for the purpose of preparing pork products. Over one-half of the entire lot is low land, in some places covered by water, and the lessees agreed to do the necessary filling at their own expense, for which they will be allowed no compensation should the lease be terminated at the end of any twenty-one year period.

The other lease was made to Mr. G. E. Lindsay, of Walkerville, who is erecting a modern plant for the manufacture of interior woodwork fittings and finishings for buildings. This lot is about one-half way between Keatings cut and the lake shore and will have a frontage on the main entrance to the district when laid out. The property contains, approximately, two acres and was leased at a rental of 5 per cent on a valuation of \$15,000 per acre, yielding a yearly rental of \$1,500. This makes a total of \$2,310 added to the rentals of this district during the year and does not by any means represent what could be added, if the district were in shape for proper advertising.

In addition to these places, conditions have been satisfactorily concluded with two other companies for leases in the district, one of which will be for a block of property containing approximately 3.85 acres and returning an annual rental of about \$2,900, and the other for a small block having a frontage of 150 feet by a depth of 360 feet, for which the rental agreed upon is to be \$1,100 per year.

In addition, there are several other companies negotiating for locations, and the prospects for the future look very bright indeed.

One of these companies, if satisfactory arrangements are made for a lease, will take a very large block of property and the revenue received therefor will amount to over \$50,000 per year.

The deed of the property from the city, did not include the property on the Woodbine sand bar, occupied by Mr. Geo. Laing, as there was an action in the courts between Mr. Laing and the city regarding the claim of the former to squatters' rights on the property. A settlement of this action was arranged under which it was agreed that Mr. Laing should receive the sum of \$5,000 for a release of all his claim upon the property, which sum has been paid over by the commissioners and their ownership of the lake front sand bars thus completed.

With the object of obtaining complete control of the water-front within the city the commissioners negotiated an exchange of land with the Canadian Pacific Railway, at the foot of Bathurst street, by which the commissioners secure all the front of the water lots, from Bathurst street west to join the water lots obtained from the city, and negotiations are still under way, as a result of which the commissioners hope to secure control of the entire water-front.

The Government dealt in the most gracious manner with the application of the commissioners for the patent of the new lands lying north and south of the new western channel, containing some 90 acres, and the patent of this property is now in course of preparation. When this is followed by a patent of the water lot in front of the exhibition grounds the entire outer water-front will be in the hands of the commission.

SESSIONAL PAPER No. 21

ENTERTAINMENT OF VISITORS.

During the summer, the commissioners were called upon, on several occasions, to join in the entertainment of visitors from other cities, notably the delegates to the International Congress of Navigation, many of whom visited the city on June 14 and 15, and were entertained by the commissioners at the Royal Canadian Yacht Club.

On June 19, the delegates to the Ontario Municipal Association were entertained to a moonlight excursion on the lake, on the steamer *Macassa*, and later in the year, the commissioners joined with the Board of Trade, and entertained a delegation of representative British manufacturers who were visiting Canada. For the latter, as well as for the delegates to the Congress of Navigation, special literature was prepared, describing Toronto and its opportunities for manufacturers, and a pamphlet, containing similar information, was printed and kept in stock for distribution.

The total amount expended during the year, on the entertainment of visitors, was \$803.80.

INSPECTION TRIPS.

In the latter part of April and the early part of May, the commissioners, accompanied by the engineer and secretary, visited Boston and New York on the invitation of the port authorities of these two cities, and inspected the harbours and dock properties and the new work in progress.

Previous to this, the engineer had visited the Atlantic and gulf ports for the same purpose and, later in the year, Commissioner Spence took advantage of a visit to Los Angeles, as a delegate to a convention there, to inspect other ports in the south and west; the chairman, Mr. Clarke, commissioner Spence and engineer inspected the works under way at Chicago, and the secretary visited Montreal, Quebec and Three Rivers. The information thus secured was very valuable in the preparation of plans approved by the commissioners.

PLANS FOR DEVELOPMENT.

The greater portion of the year was devoted to the securing of information and the preparation of plans for the development of the harbour and water-front property, details of which work are given in the engineer's report. The entire staff worked so faithfully that this work was completed at a much earlier date than had been expected, and the complete plans of the commissioners were presented to the city council and the public on November 14, a copy of the report, which accompanied the plans, is appended hereto. The city council approved the report, and the recommendations embodied therein, at their meeting on November 25, and undertook the expenditure of the money necessary for the construction of the work allotted to the city.

A deputation from the board later, presented the plans to the Right Hon. R. L. Borden, premier of Canada, and the members of his cabinet and asked the Government to undertake the portion of the work allotted to it. The deputation was accorded a most favourable reception and the Government afterwards approved the expenditure of a sum estimated at \$6,123,000, of which sum, \$500,000 has been placed in the estimates for 1913.

The deputation was introduced to the premier by Sir Edmund Osler, M.P., whose energetic support of the entire project had a great deal to do with the successful outcome of the visit to Ottawa. Too much gratitude cannot be expressed by the commissioners to Sir Edmund and also to Mr. A. Claude Macdonell, K.C., M.P., who has been tireless in his support of the various application made to the Government, and to the Hon. A. E. Kemp, M.P., and the Hon. Geo. E. Foster, M.P., who were always on hand to support our requests.

4 GEORGE V., A. 1914

The absence of Mr. Edmund Bristol, K.C., M.P., from the city deprived the commissioners of his aid.

The greater portion of the entire expenditure on the improvement works devolves upon the commission, and preparations are now well advanced for a flotation of bonds for the purpose of raising the necessary money.

GRADE SEPARATION.

In their last fight for the adoption of bridges as the means of grade separation, along the waterfront, the railways mentioned the Toronto Harbour Commissioners as a new party to the dispute and claimed that the construction of a viaduct would seriously injure the property of the commissioners. As a result of this action, the commissioners were forced to take a part in the grade separation controversy from which they had previously held aloof.

Under instructions from the board, Mr. Cousins prepared plans illustrating the damage which would result to the entire waterfront, should bridges be decided on and these plans were very effectively used when the appeal of the railways to the Governor in Council was heard at Ottawa. Mr. A. C. McMaster, solicitor for the commissioners, also attended to present their opposition to the appeal and joined with Mr. G. R. Geary, K.C., the Corporation counsel, in presenting such a strong case that the railways were forced to abandon their application for bridges.

An alternative route for the viaduct carrying it across the property south of the esplanade was then suggested by the railways and is, at the present time, under consideration by the city and the Dominion Railway Board.

FINANCES.

The total revenue of the commissioners, for the year, amounted to \$56,456.21, of which sum \$47,621.04 was received in rentals and \$7,667.32 in harbour dues by the harbour master. The balance of \$1,167.85 was interest on debentures and deposits.

This revenue was further augmented by the sale of \$9,000 worth of bonds held by the commissioners. There was also a cash balance on hand at the beginning of the year, amounting to \$8,866.67, making the total revenue for the year, \$74,322.88. The total expenditure for the year amounted to \$75,809.47 leaving a deficit on the year's work of \$1,486.59.

To offset this, the commissioners are owners of city of Toronto and Canada Permanent Loan Co. bonds of the value of \$15,000 which are on deposit with the bank of Toronto. The details of the finances for the year are shown in the attached statement furnished by the Accountant.

THE STAFF.

This report would not be complete without some reference to the loyal work of the staff of this department. The year's work has been arduous owing to the fact that it consisted of the organization of a completely new system to which ordinary mercantile systems were not applicable; and it was owing largely to the enthusiasm and disregard of office hours, on the part of the entire staff, that the organization was brought to its present satisfactory state in such a short space of time. I am pleased, therefore, to take this opportunity of expressing to the commissioners my appreciation of the work of Mr. M. H. McCallum, chief clerk, Mr. Thos. Graydon, accountant, and the staff generally.

The statement of the finances for the year has been prepared by Mr. Graydon and approved by the auditors and is attached hereto.

All of which is respectfully submitted.

ALEX. C. LEWIS,
Secretary.

SESSIONAL PAPER No. 21

RECEIPTS FROM JANUARY 1 TO DECEMBER 31, 1912.

Balance in Bank of Toronto, January 1, 1912.....	\$ 5,691 32
Deposit account in Imperial Trust Co.....	5,157 31
Cash on hand.....	8 04
Debentures in safe keeping with Bank of Toronto, January 1, 1912.....	\$24,000
Rents received	43,432 89
Harbour dues.....	7,667 32
Interest on debentures.....	\$914 70
“ deposits, Bank of Toronto....	114 15
“ deposit account (Imperial Trust Co.).....	139 00
	<hr/>
	1,167 85
Sale of old motor boat.....	500 00
Sale of old furniture.....	22 71
Insurance, return on premium.....	135 08
Miscellaneous returns.....	153 28
Deposits on tenders.....	423 20
Loan by Bank of Toronto (overdraft).....	4,068 72
Liquidation of debentures	9,000 00
Cheques (outstanding December 31, 1912).....	368 75
	<hr/>
	\$75,809 47

EXPENDITURES, JANUARY 1, 1912 TO DECEMBER 31, 1912.

Brock Street dock.....	\$ 942 69
Canadian Lake Line, Ltd., dock and shed.....	122 91
Inland Lines, Ltd., dock and shed.....	565 82
Jacques Line, Limited, dock and derrick.....	149 88
Lakeside Home dock.....	12 90
Manitou Road bridge dock.....	15 25
Miscellaneous docks and inspection.....	595 11
Toronto Ferry Co., Ltd., dock—Centre island.....	1,758 61
“ “ foot of Bay st.....	1,338 31
“ “ Turbinia dock.....	51 33
“ “ Ward's Island dock.....	1,194 34
Painting water-front buildings.....	1,599 15
Storehouse—harbour square (building).....	189 97
Plant and tools.....	150 85
Dredging channel approaches.....	6,112 63
Lights, buoys and beacons.....	103 35
Legal expenses.....	32 40
Insurance (employees and property).....	533 92
Life-saving appliances.....	1,028 05
Advertising.....	144 25
Entertainment.....	803 80
Printing and stationery.....	669 14
Queen's Wharf maintenance.....	556 37
Supervision and inspection (National Iron Works dock).....	43 85
Travelling expenses (general and engineering).....	2,494 10
Automobile.....	3,072 75
Automobile maintenance.....	526 88
Motor boat.....	2,038 59
Motor boat maintenance.....	582 26
Office furniture (general).....	712 70
Office expenses (salaries)	6,580 79
“ (expenditure).....	4,355 37
Interest on overdrafts.....	5 40
Deposits on tenders (refunded).....	423 20

Capital Expenditure.

Borings (complete water-front).....	2,120 14
Ashbridge bay improvement.....	1,164 24
Drafting department.....	6,788 61
Engineering equipment.....	687 32
Toronto Harbour Industrial District (foundations tests).....	238 64
General engineering.....	5,163 71
Grade separation (viaduct).....	92 64
Hydrographic survey.....	2,329 28
Property survey.....	868 16

EXPENDITURES, JANUARY 1, 1912 TO DECEMBER 31, 1912.—*Concluded.*

Capital Expenditure—Concluded.

Precise levels (bench marks).....	130 00
Hydraulic dredge No. 3.....	
Filling in Industrial District.....	3,540 82
Toronto Harbour Industrial District, filling.....	286 71
Water-front survey.....	4,952 25
Water-front development.....	6,656 70
Suspense account (harbour dues).....	80 14

Accounts Receivable.

Ashbridge bay docks.....	669 98
Seawall—Exhibition, westerly.....	487 77
People's Steamboat Co. (dock damages).....	9 00
Cash on hand.....	38 42

\$75,809 47

T. GRAYDON,
Accountant.

GENERAL BALANCE SHEET, AS AT DECEMBER 31, 1912.

Dr.

Wharf properties and equipment.....	\$8,794,924 00	
Investment account	15,000 00	
Office furniture.....	939 48	
Automobile.....	3,000 00	
Motor-boat.....	1,800 00	
Plant account.....	218 57	
Suspense account.....	80 14	
Rents receivable.....	4,188 15	
Accounts receivable.....	1,166 75	
Cash on hand.....	38 42	
		\$8,821,355 51

Capital Expenditure.

Supervision and inspection.....	\$ 43 85	
Drafting department.....	6,787 71	
Ashbridge bay development.....	1,164 24	
Water-front development.....	6,656 70	
General engineering.....	5,163 71	
Engineering equipment.....	687 32	
Borings (complete water-front).....	2,120 14	
Foundation tests.....	238 64	
Hydrographic survey.....	2,329 28	
Property survey.....	868 16	
Water-front survey.....	4,952 25	
Grade separation.....	92 64	
Precise levels (establishing bench marks).....	130 00	
Hydraulic dredge—No. 3 filling—Toronto Harbour Industrial District, filling	286 71	
Toronto Harbour Industrial District..	3,350 82	
Travelling expenses.....	2,371 25	
		37,423 42
Property capital account No. 1.....	474,340 00	
Property capital account No. 2.....	8,320,584 00	
Bank of Toronto loan	4,437 47	
By balance to the credit of income and expendi- tures	59,417 46	
	\$8,858,778 93	\$8,858,778 93

T. GRAYDON,
Accountant.

We beg to report that we have maintained a running audit of the books and accounts for the past year and certify that the statements attached are correct and are in accordance with the books of the commissioners.

The insurance policies and receipt from the bank for securities held by them have been examined and are in order.

S. BRUCE HARMAN,
SYDNEY H. JONES,
Auditors.

SESSIONAL PAPER No. 21

GENERAL BALANCE SHEET, AS AT DECEMBER 31, 1912.

ASSETS

Properties.

Leuty avenue (in front of).....	\$ 1,980 00
Kew beach avenue park (in front of).....	18,240 00
Waverley road (in front of).....	1,980 00
Kenilworth avenue (in front of).....	1,980 00
Woodbine beach lots.....	42,625 00
Woodbine beach and marsh lot.....	187,720 00
Woodbine beach water lots.....	75,000 00
Eastern sandbar lots east of Simcoe park.....	81,825 00
Eastern sandbar water lots.....	270,000 00
Simcoe park.....	59,925 00
Eastern sandbar lots west of Simcoe park.....	36,500 00
Toronto Harbour Industrial District.....	3,024,050 00
Lot leased to British American Oil Co.....	84,560 00
Lot leased to M. J. Haney.....	6,500 00
Lot leased to Maciver Bros. & Co.....	16,200 00
Lot north of Maciver Bros. & Co.....	3,760 00
Lot leased to British American Oil Co.....	27,370 00
Esplanade water lots, Berkley street to Princess street.....	346,467 00
Lot leased to Lyman Bros. & Co.....	36,392 00
Lot leased to Polson Iron Works, Ltd.....	86,612 00
Lot leased to Chisholm Milling Co. and M. J. Haney.....	111,600 00
Lot leased to Toronto Electric Light Co.....	287,725 00
Lot leased to Elias Rogers Co.....	15,875 00
Lot leased to Niagara Navigation Co.....	92,000 00
Yonge street wharf properties.....	221,500 00
Yonge street wharf water lots.....	95,000 00
Ferry wharfs.....	171,000 00
Water lots.....	33,000 00
Water lots.....	13,500 00
Harbour Square wharfs.....	430,000 00
Water lots.....	13,500 00
Water lots west of Harbour Square.....	258,708 00
Lot leased to Argonaut Rowing Club.....	30,000 00
Lot leased to Toronto Canoe Club.....	75,000 00
Lot leased to Canadian Pacific Railway Co.....	90,000 00
Bayside park 450 feet on Lake street, 450 feet on Harbour street.....	292,500 00
Lot leased to A. R. Williams Machinery Co.....	153,800 00
Lot leased to Canadian Pacific Railway Co.....	275,250 00
Queen's wharf.....	240,500 00
Water lot west of Queen's wharf.....	218,000 00
Water lot in front of Garrison common.....	252,000 00
Seawall construction.....	115,000 00
Water lots Dufferin street to Humber.....	816,000 00
Plant, dredges, etc.....	60,000 00
Automobile.....	3,000 00
Motor-boat.....	1,800 00
Office furniture general.....	939 48
Engineering department, office furniture, fixtures and equipment.....	1,181 13
Plant and tools (Harbour Square storehouse).....	218 57
Account receivable as per schedule.....	4,188 15
Account receivable as per schedule.....	1,166 75
Debentures in safe keeping, Bank of Toronto, December 31, 1912.....	15,000 00
	<hr/>
	\$8,822,418 08

LIABILITIES.

Accounts payable as per schedule.....	\$ 8,313 69
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INCOME AND EXPENDITURES.

	Dr.	Cr.
Balance to the Cr. of income and expenditure.. .. .	\$ 76,294 27	
Less property account trans.....	43,073 72	
	<hr/>	
Rentals.....		33,220 55
Harbour dues.....		47,621 04
Interest on debentures and deposits.....		7,667 32
		1,162 45

GENERAL BALANCE SHEET, AS AT DECEMBER 31, 1912—*Concluded.*

INCOME AND EXPENDITURES—*Concluded.*

Brock Street dock.....	\$	942 69	
Canadian Lake Line dock and shed.....		122 91	
Inland Line, Ltd., dock and shed.....		565 82	
Jacques Line, Ltd., dock and derrick.....		149 88	
Lakeside home dock.....		12 90	
Manitou road bridge dock.....		15 25	
General labour and inspection miscellaneous docks.....		595 11	
Toronto Ferry Co., Centre island dock.....		1,758 61	
“ Dock foot of Bay street....		1,338 31	
“ Dock Old Turbinia.....		51 35	
“ Dock Ward’s island....		1,194 34	
Painting water-front buildings.....		1,599 15	
Store house erection (Harbour square).....		122 25	
Dredging channel approaches....		6,112 63	
Lights, buoys and beacons.....		103 35	
Legal charges.....		32 40	
Insurance on employees and property.....		398 84	
Life saving appliances.....		1,024 45	
Advertising account.....		144 25	
Entertainment account.....		803 80	
Printing and stationery.....		669 14	
Office expenses (including salaries, rent of offices and exchange of service).....		10,934 58	
Queen’s wharf (maintenance).....		549 17	
Automobile (maintenance).....		587 48	
Motor-boat.....		320 85	
Written off furniture account.....		104 39	
Balance to the credit of income and expendi- tures.....		59,417 46	
		\$89,671 36	\$89,671 36

T. GRAYDON,
Accountant.

Audit and found correct.

S. BRUCE HARMAN,
SYDNEY H. JONES,
Auditors.

THE TORONTO HARBOUR COMMISSIONER’S INSURANCE.

	Insurance.	Premium.
	\$ cts.	\$ cts.
Motor Boat—		
Western Assurance Co., No. 2608.....	2,000 00	7 00
Automobile—		
Employers Liability Assurance Company, No. 1197.....	(10,600 00) 5,000 00)	131 00
Employees—		
Travellers Insurance Co., { No. 565913 } { No. 565912 }	Accident.	(19 60) 189 82)
Queen’s Wharf Property—		
Commercial Union Assurance Company, No. 8799769.....	3,600 00	22 50
Wharf Properties, &c.—		
Union Assurance Co., No. 1837851.....	34,151 00	484 94
Sun Insurance Co., No. 9960939.....	11,000 00	156 20
Employer’s Liability Assurance Co., No. 101943.....	11,453 00	162 63
Royal Insurance Co., No. 270655.....	60,000 00	852 00
New York Underwriters, No. 37419.....	30,000 00	426 00
London & Lancaster Fire Ins. Co., { No. 72685 } { No. 9767225 }	50,000 00	710 00

SESSIONAL PAPER No. 21

Mr. ALEX. C. LEWIS,
Secretary, Toronto Harbour Commission,
Toronto.

SIR,—I have the honour to submit my report for the year 1912.

The harbour was not frozen over until January 6, and it was clear of ice on April 16, having been frozen over for 111 days, the same duration as last year.

The first vessel to arrive was the *Macassa*, Captain Henderson, with passengers and cargo from Hamilton on April 9.

The last arrival was the steam barge *Carlton*, Captain Groulx, with coal from Erie for the Standard Fuel Company, on December 20.

The number of vessels arriving this year is 3,514, or 322 more than in 1911. Below is a comparative statement of arrivals and tonnage:—

	1911	1912	Decrease.	Increase.	Registered Tonnage.	
					1911	1912
Propellers	711	871	.....	160	381,531	423,653
Steamers.....	2,070	2,336	.....	266	1,213,788	1,363,479
Sailing vessels.....	411	307	104	.....	54,578	44,418
	3,192	3,514	104	426	1,649,887	1,831,550

Coal receipts for the year are as follows:—

Hard coal..	104,964 tons.
Soft coal..	16,640 “
Total..	121,604 “

This is 4,625 tons less than for last year, and the shortage is accounted for by the difficulty experienced in procuring cars to convey the coal from the pits to the lake ports.

The quantity of coal imported into this port for the year 1912 as per returns from Ottawa was as follows:—

By rail and vessel, hard coal..	890,375 tons.
“ “ soft coal..	921,561 “
Total..	1,821,936 “

It will be noticed that the coal imported by vessel is barely one-fifteenth of the quantity imported by rail and, as I stated in my report for last year, this reduction must be more and more noticeable year by year, for, as the city extends north and west, the railways can deliver coal almost at the consumers' doors, while the vessel trade is handicapped by the long haul from the waterfront.

There are ninety-nine vessels wintering here this year, viz: Nine passenger steamers, thirteen steam barges, six tow barges, six steam yachts, eleven steam ferries, fourteen steam tugs, twenty-eight pleasure yachts and twelve dredges, pumps and derricks; representing, in all, about 25,795 tons register.

The new western channel has been open for navigation since the commencement of the year and proper lighthouses were erected by Government and are maintained by the Department of Marine and Fisheries in Ottawa. The lights at the old western channel have been discontinued as the channel is seldom used.

The lake level, which was low at the commencement of the year, has recovered its normal height and is now at a fair average for this time of the year. The highest point reached was 27 inches above zero on June 16; the lowest level was 4½ inches below zero on March 13. The average for the year is 10 inches above zero or 8 inches above the average for 1911.

The spar buoys were placed out on April 18 and the can buoys on May 3. They were all taken up on December 14. A gas buoy, loaned by the Government to the city, was placed at the mouth of the intake pipe on June 26 and taken in on December 19. This buoy has proved a great protection to the plant engaged on the intake pipe and has doubtless prevented many collisions during the season.

The harbour dues collected during the year amount to \$7,667.32, an increase of \$99.90 over last year.

Below, I give a comparative statement of goods arriving at the port of Toronto for the years 1911 and 1912:—

Description of Goods.	1911	1912
General merchandise.....tons	83,279	81,716
Coal....."	126,229	121,604
Horses, carriages and horned cattle	323	806
Lumber.....ft. B.M.	1,037,900	2,927,000
Bricks.....common	2,560,000	331,000
".....scoria	368,000	171,000
Ice.....tons	7,898	5,964
Fruit.....bbls.	184	120
".....crates.	9,680	445,215
".....baskets	493,471	397,939
Lake stone.....toise	12,038	14,903
Oil in bulk.....bbls.	101,898	130,540

Mr. R. F. Stupart, Director of the Meteorological Service, Toronto, reports upon the display of storm signals on the lower lakes, as follows:—

‘The display of storm signals on the lower lakes for the season of navigation of 1912 was resumed on April 8 and discontinued on December 8. During this period, signals were displayed on the two stations in Toronto harbour, viz, Queen’s wharf and Eastern gap. On sixteen occasions, on five of which the velocity of a gale was not quite attained locally, although on three of these five the display was justified by gales on the lakes. The heaviest gale occurred on November 13, when a maximum velocity of 40 miles per hour was recorded.

On four occasions the greatest velocity was easterly; on three northwesterly, on two southwesterly and on one each westerly and northerly.

‘Moderate gales occurred on two occasions for which no signals had been displayed.’

TEMPERATURE AND PRECIPITATION FOR THE YEAR 1912 AT TORONTO.

Mean.	Maximum.	Lowest.	Rain.	Snow reduced to water.	Total.
44.8	92.7	18.8	25.66	6.87	32.53

Detailed statement of various accounts connected with this service will be submitted in due course by the chief accountant.

I am, sir, yours truly,

COLIN W. POSTLETHWAITE,
Harbour Master.

SESSIONAL PAPER No. 21

ANNUAL REPORT OF THE ENGINEERING DEPARTMENT OF THE TORONTO HARBOUR
COMMISSIONERS FOR THE YEAR 1912.CHIEF ENGINEER'S OFFICE,
TORONTO, December 31, 1912.*To the Chairman and Members of the Toronto Harbour Commission, Toronto:—*

GENTLEMEN:—In accordance with your instructions, I have the honour to submit to you the annual report of the department for the year ending December 31, 1912, setting forth the various works carried out during the year.

OFFICIAL STAFF.

Consulting engineer, J. G. Sing, M. Can. Soc. C.E., O.L.S., D.L.S.

Chief engineer, E. L. Cousins, B.A. Sc. A.M., Can. Soc. of C.E.

Assistant engineer in charge of surveys, N D. Wilson, B.A. Sc., O.L.S., D.L.S.,
A.M. Can. Soc. of C.E.Assistant engineer in charge of designing J. R. Wainwright, B.A.Sc., A.M. Can.
Soc. of C.E.

Superintendent of Construction, A. C. Mitchell.

Chief draftsman, J. E. Hollaman.

The engineering department was organized during the first two weeks of February, following the appointment of your board of the undersigned as chief engineer. It was essential that quick action be taken in order that the ice on the bay might be taken advantage of for general survey work.

It was decided that a complete land and hydrographic survey of the entire waterfront should be made before any plans for future development were prepared.

SURVEYING DEPARTMENT.

The soundings of Toronto bay and Ashbridge marsh commenced on February 5, and were completed, in so far as soundings taken from the ice, on March 12.

Five thousand eight hundred and sixty-five (5,865) soundings were taken through the ice, average thickness of ice being 20 inches, the average cost per sounding, 27½ cents.

The base line which governed the instrument work in taking soundings, is tied in to points on the shore, in order that it can readily be laid down on the ice at any future date and soundings again taken over the exact points at which they were taken this year.

Subsequently, during the spring and summer, soundings were made in the slips, where sewers had rendered the ice unsafe, during the winter, and also in the eastern and western channels, and for fifteen hundred feet from shore along the whole curve of Humber bay from Gibraltar point on the island to the mouth of the Humber river, and in addition in the lake for 1,500 feet from shore, from the eastern channel to the east city limits, in all a total of 1,789 soundings in open water, at a cost of \$705 or 39.5 cents per sounding. The total cost of all soundings made was \$2,329.28 for 7,654 soundings, or an average cost of 30.4 cents each.

The soundings were all reduced to the zero of the Harbour Commissioners' gauge, or 245.00 above mean sea-level, New York.

Toronto bay was found to have a very level and uniform floor extending from the submerged rock outcrop along the Windmill line to the very steep submerged bank of the island, about 500 feet north of its present shore line. In its central portion, it averages 25 feet in depth, with a maximum of 33.5 feet, about half way between Bay street and the R.C.Y.C.

Ashbridge bay was found to be of no depth whatever except in dredged channels east, as far as Carlaw avenue, where it dips down very gradually and evenly and attains a maximum depth of 6.5 feet below H.C. gauge opposite Coatsworth cut.

In all localities of sandy, open lake shore, the bottom fell away on a uniform slope of about one per cent. The rock formation between Bathurst and Roncesvalles is on a grade descending southerly, varying from one to three per cent.

During the summer, for purposes of water-front development estimates, and in connection with borings, a geological plan of Toronto bay was prepared, showing ten foot rock contours, and the toe and shoulder of the sandy reef of the island.

From the soundings and borings it is immediately apparent that the Toronto island and Fisherman's island is a long, sandy reef, very steep on the northerly side and gently sloping on the lake side and resting on rock and original clay strata; and that behind this reef the Don river has deposited many feet of fine clay sediment which, filling up the V-shaped basin, so formed, now forms a level floor to Toronto bay and Ashbridge marsh.

WATERFRONT SURVEY.

The chief work was the survey of conditions existing along the waterfront from the east city limit to Humber river. Of this survey all buildings were located in addition to the railway tracks, wharfs, etc.

Owing to the question of grade separation of railway tracks along the waterfront engaging the attention of the commissioners, the limits of this survey were extended farther north than was originally anticipated. Generally speaking, the northerly limits of this survey was as follows:—

Commencing at Victoria park, (the Scarboro town line) it follows a line, roughly parallel, and about 300 feet distant from the lake shore, to Woodbine avenue, where it extends northward to Queen, to Eastern avenue, to the C.P.R. tracks, to Esplanade street and as far north as the main lines of the railway companies at York street, thence to Portland street to Wellington street, to Strachan avenue, thence south of the Grand Trunk main line to Hamilton, from Strachan avenue through to the Humber river, comprising in all about 2,142 acres. These surveys, up to December 31, cost \$4,952.25.

The total chainage of miles run was 128.8 miles, and approximately 2,350 buildings of all kinds were accurately measured up and located by this survey. The average cost being \$38.45 per mile or \$2.31 per acre.

Throughout the survey, the bearings of all lines were referred to the astronomic meridian. Several observations were taken to secure the accuracy of the initial bearing.

Owing to the fact that the city surveyor had just completed a very comprehensive survey of part of the islands, it was only deemed necessary to survey such portions as were not included in his survey. However, careful chainage and angular ties were made to his main traverse points and those of this department so that the island system of courses could be incorporated with those of our main waterfront survey.

LATITUDES AND DEPARTURES.

To ensure that the plotting of the notes would be accomplished with the maximum degree of accuracy, and in addition make every effort to locate possible field errors in the traverse lines before the notes were placed in the draftsmen's hands, all the survey courses were computed and reduced to co-ordinates by the method of latitudes and departures.

This work was, in itself, of considerable magnitude and required the services of two computers during the months of May, June, July and August. This cost alone was about \$1,000.

SESSIONAL PAPER No. 21

The results were well worth the labour and costs, as it assured the highest possible degree of accuracy in the plotting, as well as the absolute dovetailing of numerous sheets on a scale of 40^m to the inch, and rendered possible the plotting of any section or district of the waterfront separately with the certainty, that when the adjoining districts were plotted the sections would match perfectly.

WATERFRONT DEVELOPMENT.

The work occasioned by the contemplated development plans for the industrial district and lake front was two-fold.

In addition to the soundings as mentioned under Hydrographic Survey, numerous lines of levels were run. From the data so obtained, the quantities of filling required, and of dredging obtainable, were computed for assumed conditions from the plotted graphs of parallel transverse sections.

The total amount expended for this work was \$970.39.

GRADE SEPARATION.

In connection with the application of the railway companies to the Privy Council to set aside the viaduct order and construct overhead bridges as a means of grade separation, it was necessary for the Surveys Department to obtain profiles of all street crossings from Spadina avenue to Queen Street East.

PRECISE LEVELS.

A manifest essential of any such comprehensive construction as the Toronto harbour commissioners' proposed development, is a permanent bench of assumed elevation to which all other bench marks required may be referred. It is a matter of manifest convenience that the assumed plans of reference for each series of such benches for various works in any vicinity be the same. It is a matter of the utmost importance that such an international work as Toronto harbour should be referred to the same datum plans as the Welland canal and the harbours of Chicago, Duluth, Fort William and Buffalo.

The datum plane of reference everywhere in United States of America means sea-level of New York harbour. It is therefore essential to determine the elevation of a bench mark in Toronto above this plane, with the highest degree of accuracy possible.

As the elevation of any bench mark above any other bench mark can never be determined exactly, but its probable error may be made less and less, as the number of connecting lines and loops of levels become more and more, with increased date comes the necessity of adjusting periodically all levels.

In 1903 the United States lake survey and the United States coast and geodetic survey made a most rigorous reduction of their levels and redetermined the elevations of their bench marks. This adjustment of 1903 is the basis of all United States levels and of all levels of the Canadian Government.

By gauge readings at Oswego, since 1860, the elevation of mean water level of lake Ontario referred to this sea-level datum is obtained as 246.2.

By water transferred from Oswego during 1906 by the Public Works Department (Georgian Bay canal survey) with automatic gauge, the elevation of the Garrison creek sewer portal is obtained and by direct instrumental connection the zero of the harbour master's gauge is given as 245.0. From the readings of the harbour master at Toronto with those at Oswego since 1861, the elevation obtained at Toronto is 245.12

4 GEORGE V., A. 1914

Previously, to the publication of the report of the Georgian Bay Canal survey a considerable difference of opinion existed as to the height of the harbour master's gauge above sea level; it being variously assumed from time to time to be 244.64, 244.85 and 245.2.

For some reason unknown, a persistent inconsistency lay in the assumption, apparently without foundation, and apparently without public data to the contrary, that the zero of harbour master's gauge reads mean water level of lake Ontario.

After going carefully into this matter, there is no doubt in our mind as to the zero of harbour master's gauge being 245 above mean sea-level New York, and that mean water level of lake Ontario, from a careful research of all the records since 1860 is 246.2.

To make assurance doubly sure, and to connect up the lost link of proof, it is my intention to ask the commissioners to allow me to run four miles of levels from the geodetic survey of Canada bench mark at Merriton, to the Naval Service Hydrograph at Port Dalhousie, where elevation is known by water transfer from Oswego.

At the present time, the Geodetic survey levels in Toronto are unadjusted and unsupported and the listed elevations of their benches misleading to that degree.

Immediately on commencing to run levels this year there arose the difficulty of an indefinite datum. The city engineer's department were in the same position.

An entire new set of precise levels has been established throughout the city and the uncertainty of a datum deferred the marking of them with their elevations. I may say that it has since been decided to establish the harbour master's gauge as 245 even, and with this as a basis the bench marks throughout the city and along the waterfront will be marked accordingly.

With the contemplated development, we were fully aware that it would be necessary to have absolute bench marks along the water front and we have therefore established some as near to the water as practicable. These levels being connected with the precise level work being done by the city.

In connection with the taking of readings to obtain the rise and fall in lake Ontario, it has been essential on account of accommodation to take portion of the readings at Queen's wharf during the season of navigation, and the remainder on Toronto Electric Light Company's slip, on account of the fact that it does not freeze up in the winter.

In the past, this has been unsatisfactory and will always be so; and for that reason I would recommend, that, when the administration building is constructed by the commissioners a hydrograph be installed in the basement by a submerged pipe line out to the end of the docks.

PROPERTY SURVEY.

Under this heading is included the delineation and demarcation of street and property lines, both as at present existing and as proposed in the industrial district.

As the base line to which all the Commission's property along the harbour front is referred, it was necessary to retrace the old Windmill line with extreme accuracy, The last survey of this line being made by Charles Unwin, O.L.S., in 1890, when a parallel offset to it was run along the ice from Trinity street to near Spadina avenue. While this line at that time was well referenced to the wharfs and buildings, the changed conditions along the waterfront in the last twenty years that out of upwards of noë hundred ties originally made, there were only three recoverable, I may say that this line has been ranged through and located at many points from Trinity street to the Exhibition sea wall.

The northerly limit of the marsh lands, as patented to the city, May 18, 1880, now known as the Industrial District, was another series of long lines of great importance to accurately define on the ground. This line had been originally located

SESSIONAL PAPER No. 21

with great precision, and staked with large cedar posts; but it was found, that these posts, in many places had moved almost in every direction out of line in the semi-fluid marsh condition.

As these lines were long and impossible of ready access except during the winter, and as the properties abutting them were cheap, accepted positions had been assumed for these boundaries. These positions, while fairly accurate, could not possibly be acceptable to the Commission; and we therefore, determined it was necessary to re-locate these lines direct from the old ties given by Unwin in his original notes. The north limit of this district was finally located after much difficulty; and we can safely say, that it is an exact retracement of the line as originally laid out.

The positions of all the streets, where they enter the Industrial District, from Woodbine avenue to Parliament street, have been determined and the streets ranged.

The exact location of the southerly limit of the Grand Trunk boundary, from Parliament street to Eastern avenue has been made and plotted, together with the lands expropriated by the city for the Don straightening.

Both sides of the Main street of the Toronto harbour Industrial District have been staked in accordance with the plan approved by your Board, and the south limit of the industrial district ranged through, from the eastern channel to Woodbine avenue.

Further measurements along the lines of the approved subdivision are under way so that a plan of this subdivision may be registered.

Search is being made in the Crown Lands Department, for the description of all water lots patented to date, across the entire waterfront; and these descriptions are being compiled into one plan. The central section of this plan is not yet complete, as information concerning the original patent titles is difficult to obtain, necessitating much concentrated and continuous search.

In addition to the above work of the Survey Department, detail plans and descriptions were prepared for properties leased by the Commission to:—

1. McIver Bros.
2. Mr. G. E. Lindsay.
3. Laing Claim.
4. Water lots applied for at Western channel.
5. Water lots applied for at Exhibition grounds.

The total expenditure to date under property survey has been \$868.16.

STONE MONUMENTING.

While an allowance was made in the estimates of 1912 for stone or concrete monuments across the waterfront, none has yet been planted, it being deemed more economical to delay them until such time as a special party could be permanently placed on this work. Some 25 or 30 corners are now ready for monuments, the points now being located by 3-inch cedar posts.

We are indebted to the various property owners for allowing us to have access to their properties for work of necessity along the water front.

Herewith is a statement of expenditure by the Survey Department during 1912.

	Wages.	Expense.	Equipment.
	\$ cts.	\$ cts.	\$ cts.
Waterfront survey.....	4,706 34	245 91	
Hydrographic survey.....	2,189 89	139 39	
Engineering equip.....		71 37	615 95
Property survey.....	800 90	67 26	
Grade separation.....	92 00		
Precise levels.....	130 00		
Waterfront and Ashbridge Bay development.....	970 39	4 80	
General engineering.....	435 00		
	9,324 52	529 37	615 95

A total of \$10,473.84.
Of the expenditure of \$615.95 for equipment, \$475 was for instruments.

DRAUGHTING DEPARTMENT.

The work of this department consisted mainly of the preparation in detail of the various studies of development plans submitted from time to time to your Board.

The work of this department can be briefly summarized as follows:—

1. Plan of existing railway conditions on a scale of 100 feet to the inch from the C. P. R. diamond at Strachan avenue as far east as the Queen street east crossing of the Grand Trunk railway.

2. Plan of Toronto island on a scale of 100 feet to the inch, plotted from combination of city surveyor and our own survey department notes.

3. Plotting of entire waterfront survey from Humber river to Woodbine avenue on a scale of 100 feet to the inch, including Toronto islands.

Two tracings were made of this plan, one showing existing conditions, the other showing proposed development, coloured red.

Six sectional tracings were made on linen of this large plan:—

1. Western Section.—Humber river to Bathurst street.

2. Central Section.—Bathurst street to Cherry street, including islands.

3. Eastern Section.—Cherry street to Woodbine avenue. One of these sets showed existing conditions; the other existing conditions in black and proposed development in red.

4. Detail plan of Toronto Harbour Industrial District on a scale of 200 feet to the inch. This plan was plotted from natural surveys. Tracings on linen were also made.

5. Another plan of Toronto Harbour Industrial District was made on a scale of 500 feet to the inch, which was used principally in connection with consideration of the various plans for the development of the industrial district.

6. Waterfront Survey.—Plans are in preparation of the entire waterfront survey on a scale of 40 feet to the inch, including the islands.

These plans are being plotted by latitudes and departures on heavy mounted drawing paper, the size of each sheet being 7 feet 6 inches by 3 feet 6 inches, 72 inches in all, inked in and furnished in black, hubs, traverse lines, bearings, etc., in blue, and meridians in green. About 20 per cent of this plotting is completed. We are reducing these sheets by means of the pantograph to a scale of 100 feet to the inch.

The main object of this work is that upon its completion we will be in a position, for an expenditure of about \$400 per year, to have our waterfront plans, as to exist-

SESSIONAL PAPER No. 21

ing conditions, kept up to date from year to year, for the reason that by the means of the system adopted, the entire waterfront can be checked and corrected by one survey party in about six weeks time.

Development Plan.—Negatives were taken from the tracing of the Toronto Harbour Industrial District plan, on a scale of 500 feet to the inch and black line prints prepared from same.

Twelve designs for the development of this district were plotted and submitted to your Board, together with estimates in detail, as to cost of development, necessary yardage, dockage and area available for industrial development, upon the completion of the work.

In addition, five different designs for the development of the waterfront, from a purely æsthetic and park treatment feature, i.e., with particular application to the portion along the waterfront from Victoria Park to the eastern entrance, thence across the islands to the western entrance and from the western entrance through to the Humber river. Estimates for same were prepared in detail for the entire treatment to accompany each study, all of which were prepared on plans on a scale of 100 feet to the inch.

After your Board had approved of the industrial development plan and decided on the treatment that should be given to the waterfront proper, from Victoria Park to the Humber river, entirely new tracing was prepared showing, in black, the existing condition and, in red, the proposed development, from which negatives were made and six large white prints prepared, with finished colouring and lettering.

Sectional plans were also prepared for eastern, central and western sections, showing the approved development for each portion of the waterfront. In addition, tracings were made of eight cross sectional studies, which indicate in detail the proposed development at eight different points on the water front.

Grade separation plans.—This department prepared detail plans on a scale of 100 feet to the inch for each street crossing from Spadina avenue to Queen street east crossing of the Grand Trunk railway. In addition, each plan had the profile of the street indicated thereon, and grades of approach as they would have to be for bridges, with 22 feet 6 inches clearance, 18 feet clearance and 18 feet clearance providing for 2 feet depression of the main lines of the railway companies across the waterfront.

Six sets of coloured prints were prepared for your Board, and the city in opposing the application of the railway companies for overhead bridge construction in place of viaduct along the waterfront as ordered.

Miscellaneous plans.—Tracings of plans showing location of property transferred to the commission made from the city surveyor's office original plans—nineteen tracing in all.

Various tracings were made from registry office plans in connection with research work and location of boundaries along the waterfront.

Property plan showing ownership from the Humber river to the eastern city limits, prepared on a scale of 300 feet to the inch for general purposes.

Detail plan of all the conditions surrounding Bathurst street on a scale of 100 feet to the inch was prepared in connection with exchange of land between C.P.R., and your Board, with particular application to the extension of Bathurst street in a southerly direction by the boulevard drive.

The expenditure of this department for the year 1912 was as follows:—

Labour.. . . .	\$ 5,247 27
Furniture.. . . .	493 81
Material.. . . .	1,024 45
Miscellaneous.. . . .	9 72
	<hr/>
	\$ 6,775 25

4 GEORGE V., A. 1914

Construction department.—The board of control in their report No. 6 adopted in council April 1, 1912, authorized, that the supervision of the construction of the new docks in Ashbridge bay and the extension of the sea wall westerly from the exhibition grounds, both of which were under contract at the time of transfer of property to the harbour commissioners, be transferred to the Toronto Harbour Commissioners.

Regarding general maintenance, special attention was given to the substructures, and the superstructures given general repairs where necessary to all docks under control of your Board.

Practically all of the buildings under the control of your Board on the waterfront were painted during the year 1912.

Ashbridge bay docks.—Tenders for dredging the crib berths were called on April 26, 1912, and closed on May 6, 1912. The contract for the dredging was accepted by your Board at the meeting of May 13, 1912, and signed on June 17 by Contractor J. E. Russell, price being $17\frac{1}{2}$ cents per cubic yard, scow measurement, to be dumped within one mile in any one direction of the work, and a rate of \$10 per hour agreed upon for extra dredging.

In the matter of cleaning up the berths, before placing the cribs, the actual work of dredging was commenced on June 7, 1912.

The cribs were completed to eleven courses at slip No. 44, foot of Bathurst street on June 15, 1912, and the first one towed to the work to be completed on June 16.

The first crib was placed on July 11, 1912; and from that date the dredging, framing, sinking and filling went on continuously with the usual minor delays in such work, until November 28, when the last crib was sunk in place. The dredging was completed on November 26. The contractors continued to place rock filling until December 14, when navigation closed for the season, the total rock fill placed to date being 12,541 cubic yards.

During the progress of the work, very bad weather was encountered which interfered with the arrival of the stone barges. During this time the Contractors started making block concrete at slip No. 44.

The total amount of work done by the contractors, up to December 31, 1912, particularly applying to the time during which the Commissioners had supervision, was as follows: Two cribs framed from course No. 6 and sunk in place; one crib framed from course No. 4 and sunk in place; ten crib framed entirely and sunk in place, making a total of 1,589,853 f.b.m. placed in the work: 171,538 pounds of bolts in place: thirteen cribs sunk in place; 1,254 yards of stone placed, out of 29,198; forty blocks of concrete, or 16,696 cubic yards, 13,800 f.b.m. oak wailing delivered.

Mr. J. E. Russell, contractor for the dredging, removed 63,179.44 cubic yards of material from the crib berths and worked 546 hours over-casting extra dredging. This latter being principally devoted to final cleaning of the berths immediately before sinking the cribs.

The amount of progress certificates paid to the contractors, Messrs. Miller and Gibson, was \$50,975.52.

The total amount paid to J. E. Russell for dredging, which includes completion of, and final certificates, was \$16,803.40.

The different dredges on this work were delayed to the extent of \$605 by the contractors for the crib work moving cribs, barges, etc.

The contract is now about one-half completed, in so far as expenditure is concerned; and the portion remaining to be completed, providing rock filling is placed rapidly, based on the assumption that we will be able to place concrete retaining wall without danger of settlement, should, in our judgment, not take longer than the coming season.

Seawall exhibition.—The contract for the construction of 510 feet more or less of seawall at the exhibition grounds was awarded to Mr. Peter Arnot on a unit

SESSIONAL PAPER No. 21

price basis, who was instructed on Order No. 153, dated September 13, 1911, to commence work.

This contract was of course originally ordered by the city and was not turned over to the harbour commissioners until 1912. There was considerable delay in the signing of the contract; and when the contractor received instructions to start, it was rather late in the fall, the result being that he was only able to place three of the 30 foot cribs with their concrete blocks, no mass work at all being attempted in 1911. He, however, continued construction of the crib work and completed thirteen cribs and placed 139.15 cubic yards of concrete in moulds for the blocks.

The board of control in their report No. 6 adopted in council on April 1, authorized that the supervision of construction be transferred to the Toronto harbour commissioners, on which date the work stood as follows: Thirteen cribs 30 feet long, made; 3 cribs 30 feet long, placed; 13,915 cubic yards concrete blocks made.

On May 14, 1912, Contractor Arnot commenced the completion of this contract, under the supervision of this department and the work continued satisfactorily, as far as the workmanship was concerned with very little despatch. It was simply impossible to hurry the contractors' operations. During the month of October, the contractors encountered very rough weather; and on October 12, the last crib, No. 17, was sunk in place to perfect line and elevation and loaded with concrete blocks. The mass concrete being complete in place up to and including No. 15 crib. The storm of October 14 moved cribs Nos. 16 and 17 off line. They were re-set on October 21, the weather between October 14 and 21 being too rough to work.

On November 1, a southwest storm washed out parts of the tops of forms Nos. 16 and 17 and moved end of wall $6\frac{3}{4}$ inches north, tearing off several forms from the other cribs.

On October 28, the contractor was instructed to build with all possible speed, a crib 30 feet long 12 feet wide and 10 feet deep, to be filled with stone and placed at end of wall and at right angles to it. Again on November 4, the contractor was notified by letter to rush this work, and on November 23 the crib was placed and filling completed November 28.

The wall will have to have careful attention in the spring of 1913, the cribs straightened up and the concrete repaired where broken by the movement of the cribs.

The total amount of money paid to the contractor to date is \$9,196.91.

The work, as it stands, is not satisfactory to this department and we have retained the usual holdback until the contractor makes necessary renewals and repairs and all questions are satisfactorily adjusted with the contractor in the spring of 1913.

Maintenance and inspection of docks and wharfs.—During the year a thorough and careful inspection of all docks and wharfs under the control of your Board was found necessary owing to their decayed condition.

Toronto Ferry Co. dock, Bay street.—This dock was given general light repairs to carry them safely through the season of 1912. The joints and flooring of the passenger waiting room were renewed throughout. This dock, however, will have to have extensive repairs in 1913.

Dock at Centre island.—This dock was given light repairs to the deck, superstructure faced with 4-inch planking and new oak waling provided, but will have to have extensive repairs to caps, stringers and floor to handle the traffic of 1913.

Inland Lines Navigation Co.—The south portion for a distance of 150 feet was renewed from two courses below the deck up, including new waling sills, joists and flooring, and is now in good condition.

Old Turbina dock.—Now *Toronto Ferry Co.*—This dock was given general light repairs to the deck but will require new deck in the spring of 1913.

4 GEORGE V., A. 1914

Wards Island dock.—This dock was practically rotted away above the water line; it was renewed above mean water throughout and is now in first-class condition.

Brock Street dock, Spadina ave.—The deck of this dock was in a dilapidated condition and as a result it was necessary to put practically an entire new deck on it and it is now in first-class condition.

Richelieu and Ontario Navigation docks.—The docks and platforms in this block were given general light repairs from time to time during the season; the old wooden derrick on the south platform was renewed. However, quite extensive repairs have to be made to this dock during 1913.

Toronto Ferry Co.'s dock, north end Yonge street slip.—This dock was in a dilapidated condition and under an arrangement with Mr. L. Solman, of the Toronto Ferry Co., was rebuilt in old timber at his expense.

The roof and platforms of the freight houses leased to the Canadian Lake Line and the Inland Lines, Ltd., were repaired from time to time during the season.

Borings.—During the year borings were made by this department at various points throughout the entire waterfront, in all 4,242.5 feet of borings were taken. This was necessary to ascertain the location of the rock and the materials overlying in order to intelligently determine the best methods of construction of the different works contemplated by the commission, and in addition to prepare estimates with regard to filling material available for reclamation purposes.

Hydraulic dredge No. 3.—This dredge was built by the city of Toronto out of money appropriated for Ashbridge Bay improvements and was turned over to the commission by the city on July 22, 1912, and worked continuously up to December 26, when it was berthed at Polson Iron Works slip for repairs and overhauling during the winter.

During July, August and September the dredge was at work in the east end of the bay delivering material to the new Industrial District for reclamation purposes.

During the month of October it was loaned to the city of Toronto in return for use of dredge No. 2, the city desiring to do some work out in the lake in the vicinity of the intake. It was returned to the harbour commissioners at the end of October and continued its original work at the east end of the bay until December 13, when it was considered advisable to deepen Keating's cut from the bay to the mouth of the river Don to prevent a possible backing up of the Don river during spring freshets. This work was completed on December 26.

Total number of cubic yards handled for season, 225,000.

During the fall a coffer dam 8 feet in diameter, was driven in the newly filled land in the industrial district with the object of obtaining an accurate example of the conditions arising from depositing a quantity of sand on the marsh lands in this vicinity.

This test proved reasonably satisfactory, giving us an absolute demonstration of the effect of the sand filling on the marsh. This investigation will be continued in 1913 and a detailed report of same made to the commissioners upon its completion.

Painting.—The following buildings on the waterfront were painted: Canadian Lake Line freight shed, two coats; Inland Lake Line Navigation Co.'s freight shed, two coats; Turbina freight and passenger shed, two coats; Richelieu and Ontario Navigation Co.'s three sheds and roofs, two coats; Canadian Customs office, two coats; Brock Street Dock shelter, one coat.

SESSIONAL PAPER No. 21

CONSTRUCTION DEPARTMENT—COST OF WORK PERFORMED DURING YEAR OF 1912.

Name and Location of Work.	Work.	Labour.	Material.	Total.
		\$	\$	\$
Toronto Ferry dock, foot of Bay street.	General repairs to dock. Re- newal of passenger shed floor.	367 03	971 28	1,338 31
Turbina Steamship dock.....	General light repairs to deck...	51 35	.....	51 35
Inland Lines Navigation Co.'s dock and shed.	Renewal of portion of south end of dock, repairs to roof of shed.	131 60	432 22	565 82
Jacques Line dock, foot of Yonge street.	General repairs to platforms, scales etc.	60 60	89 28	149 88
Lakeside Home dock, island.....	Repairs to dock damaged by ferry boats.	12 90	.....	12 90
Manitou Road dock, Centre island	Light repairs to dock.....	15 25	.....	15 25
Brock street dock, foot of Spadina avenue.	Renewal of dock above water, in wood.	164 20	778 49	942 69
Hydraulic Dredge No. 3	Pumping material into Toronto Harbour Industrial District.	3,530 82	.....	3,530 82
Wards Island dock	Renewal of dock above water..	296 59	897 75	1,194 34
Toronto Ferry dock, Centre island	Timber facing dock and general light repairs to deck.	453 69	1,304 92	1,758 61
Canadian Lake Line, dock and shed.	General repairs to dock and freight shed roof.	63 78	59 13	122 91
Toronto Harbour Industrial Dis- trict.	Earth filling by teams, 9,588 yards.	286 71	... ..	286 71
Storehouse, Harbour Square.....	Erecting new storehouse, 12 feet by 16 feet.	70 22	52 03	122 23
Borings in lake and bay.....	Boring for rock location and pumping purposes.	1,861 94	258 20	2,120 14
Toronto Harbour Industrial Dis- trict.	Making foundation test loadings	126 45	112 19	238 64
General labour, inspection of docks and wharfs.	.....	578 26	16 85	595 11
Plant and sundries .....	.....	.....	218 57	218 57
Waterfront buildings	Painting all buildings controlled by Harbour Board.	966 08	633 07	1,599 15
		9,037 47	5,825 98	14,863 45

REMARKS—Material for dredge not shown. Bills subject to adjustment with city.

Designing department.—This department was created November 20, 1912. The first matter to be taken up was the detailing of several studies in connection with the eastern sea wall from the eastern entrance to Woodbine avenue.

Twelve studies embodying the use of wood, steel and concrete piling were worked up with comparative estimates. Work on the final plans for this section was commenced the latter part of December.

Studies are being worked up in connection with the Western breakwater from the western entrance to the Humber river.

Detail studies are also under way for the main ship channel, bulkhead and slip construction in the industrial district.

Dredging.—Tenders were called for dredging channels at the following points:—

	Yardage handled. Cubic yards.
Princess street—including outer channel, angle cuts and Rogers cut.	25,700
Conger coal deck.	4,513
Canada Lake Line.	1,359
Sand and supply, foot of Brook.	2,167
West Market street to Windmill Line.	9,642
Total.	43,381

4 GEORGE V., A. 1914

Proposals were received from Messrs. Weddell & Son and J. E. Russell; the contract was awarded to the latter, his tender being the lowest.

The amount paid Mr. J. E. Russell was \$6,078.48.

I would like to take advantage of this opportunity to express my appreciation of the willingness of your Board at all times to consider various propositions in connection with the development plans prepared by this department from time to time.

It was the wish of your Board that the general survey of the waterfront, both from the hydrographic and land survey viewpoint, be expedited to the fullest extent, in order that various studies and estimates might be prepared and submitted for your approval, so that some definite plan could be decided upon to enable your Board to be in a position to submit the development plan to the Government and the city of Toronto for their consideration, the result being that the entire staff of this department worked the full limit of their capacity during the year 1912.

We appreciated very much the fact that your board were always willing to consider, almost immediately, any studies or propositions which the department desired to submit for your approval to enable us to proceed rapidly with other work which could not go on until these questions were decided.

The city and the public generally will never know the enormous amount of your own time which was devoted to this work during the year 1912, but we who were closely associated with you in this work realize and appreciate beyond words the assistance rendered us from time to time during the progress of the work, for without the assistance and suggestions rendered by your Board to the department it would have been impossible to have had the plan prepared as it was early in November of 1912.

Our consulting engineer, Mr. J. G. Sing, has been ever ready to consider various propositions submitted to him for his advice from time to time and has rendered valuable assistance to the department.

Suggestions from a purely esthetic and park treatment view point made by Mr. Frederick Law Olmstead, Boston, retained by your Board in a consulting capacity for this work, were also of very great value.

With the adoption of the general waterfront improvement plan by your Board, the planning of details commenced: as a matter of fact, from a purely engineering point of view we are just on the threshold of commencing this large undertaking, for the reason that the preparation of detail plans and specifications, etc., with various studies in detail of the different sections of the work, will necessitate very careful thought and study and will, of course take considerable time.

In closing I would like to express my personal appreciation of the loyal assistance rendered the commission and the undersigned by the staff of the engineering department.

Fortunately we have had throughout the entire staff, what remuneration never procures, i.e., the personal enthusiasm of the individual in the undertaking.

Respectfully submitted,

E. L. COUSINS,
Chief Engineer.

SESSIONAL PAPER No. 21

THREE RIVERS HARBOUR COMMISSION.

The Honourable J. D. Hazen,
Minister of Marine and Fisheries,
Ottawa.

HONOURABLE SIR,—The Harbour Commissioners of Three Rivers have the honour to transmit to you herewith their annual report, showing the operations of this commission for 1912.

Considering the late opening of business, occasioned by the high and late flood of last spring, which prevented the unloading here of a few steamers, early in the season, the receipts of 1912 are considered by your commissioners as satisfactory.

As you will observe, the receipts have exceeded those of 1911 by some \$2,500.

The wharfs and property generally have been kept in the usual state of repairs.

As you are aware, an important portion of our income is being received from coal, hence the necessity of giving that trade the accommodation it requires. Presently, on account of the bad disposition of the wharf on which the Dominion Coal Company is operating, this company is occupying about 1,000 feet of our lower wharf, hindering this commission from giving to other applicants the facilities wanted.

The moving of the Dominion Coal Company to the new dock is consequently very pressing; and the commissioners beg to be allowed to again call your attention to the importance of having the works, now under way, completed as soon as possible.

By a communication to the Honourable the Minister of Public Works, on the 4th November last, the Harbour Commissioners asked that part of the basin, which the Government proposed to construct, be completed next season.

This basin being urgently needed, the commissioners respectfully ask your kind assistance in its completion.

Respectfully submitted,

HENRI GODIN,
Secretary.

THREE RIVERS, January 23, 1913.

4 GEORGE V., A. 1914

STATEMENT of Number and Tonnage of Steamers and other Vessels, reported inward and outward of the port of Three Rivers, for the year 1912.

OCEAN TRAFFIC.

RETURN OF VESSELS—INWARD.			RETURN OF VESSELS—OUTWARD.		
Nationality.	No.	Tons.	Cleared for	No.	Tons.
British.....	34	90,279	Inland Ports.....	36	76,029
Norwegian.....	11	18,973	Great Britain.....	14	42,667
Danish....	2	2,902	United States.....	1	2,817
Austrian.....	3	8,073			
Canadian.....	1	1,286			
	51	121,513		51	121,513

UNITED STATES TRAFFIC.

Steam Barges	7	1,054
Steamers.....	16	15,829
Canal Boats....	589	60,653
	612	77,536

INLAND TRAFFIC.

Boats not registered.....	24	
Schooners and barges.....	258	68,065
Tugs and steamboats.....	186	24,822
	468	92,887

RECAPITULATION.

Ocean traffic.....	51	121,513
United States traffic....	612	77,536
Inland traffic.....	468	92,887
Grand Total....	1,131	291,936

4 GEORGE V., A. 1914

NORTH SYDNEY HARBOUR COMMISSION.

NORTH SYDNEY, N. S., June 10, 1912.

A. JOHNSTON, Esq.,
Deputy Minister,
Marine and Fisheries,
Ottawa.

SIR,—I have the honour to enclose a report of the transactions of the Harbour Commissioners of North Sydney, N.S., for the year ending December 31, 1912.

A new harbour commission, composed of Messrs. James Bissett, Arthur McDermaid and Kenneth McLeod, was appointed by Order in Council on the 13th of May last, and I received from the late Board of Harbour Commissioners one deed of ballast ground property; one deed of breakwater property; one deed of Bertram property, right of way to ballast ground; release of mortgage from Nova Scotia Building Society; one tin box of papers and documents; one shipping register book; statement of receipts and expenditures to June, 1912, showing balance on hand, \$1,577.04; one Royal Bank book, showing said balance, \$1,577.04.

KENNETH MACLEOD,
Secretary.

NORTH SYDNEY, N.S., January 31, 1913.

ALEX. JOHNSTON, Esq.,
Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—We herewith submit our report for the part of the year 1912, during which we kept the register of shipping for this port. You will find this differing from former reports, in this respect, viz., that we have kept the register of vessels using this port only and did not take into consideration ships bound for Whitney pier, and Sydney; although these ships passed through the portion of the harbour under our control, they did not actually use the port of North Sydney.

On this account, we are not prepared to make a comparison of the year's shipping with last year's in every respect, but from the dues we find that the amount collected for 1912 fell short by \$333 of the amount collected for 1911. This is practically accounted for by the fact that the increase in the register tonnage of ships does not increase *pro rata* with the increase in their carrying capacity.

You will notice that the Nova Scotia Steel and Coal Co.'s shipments have increased by some 15,000 tons over the preceding year.

Local subsidized steamers, in the coastwise trade, are not included in our report.

We regret that there is not more provision made for docking ocean-going steamers in our port for, with the natural advantages, it should be as it was in former years, a favourite place of call. This was well demonstrated during the trials made of transferring passengers and mails from incoming and outgoing steamers during the seasons of 1907 and 1908.

We had a good long season for shipping, every month during 1912 having more or less shipping reported.

In the month of February, these reports were confined to the Reid, Newfoundland Company's mail and passenger steamers.

We found the breakwater at the North Bar needing extensive repairs and, according to plans approved of by your department, we had a block built at a cost

SESSIONAL PAPER No. 21

of \$1,865; this was partly to replace blocks previously carried away, and to provide a substantial and permanent head, to prevent any further encroachment by easterly storms.

In addition to this, over \$1,100 was spent in repairing the western side of the breakwater, where the face was broken down and the ballast had spewed out at different points.

We may say that there are considerable repairs required still, and further, that we are of the opinion that it is very necessary that the south end be considerably extended as soon as possible. This is necessary to prevent the sand from sweeping around from the north into the docks, especially into the Nova Scotia Steel and Coal Company's piers and the I.C.R. terminus.

A further benefit from this extension would be the protection afforded to shipping at anchor farther up the harbour, and especially to small craft seeking shelter in heavy weather. In this connection we may find it necessary to apply to you in the near future for power to borrow a larger amount than we have been allowed to do in the past.

At present, all our indebtedness of the past is paid up in full, mortgages being released, and full and clear titles being held to all properties vested in us.

We would also suggest that a bell buoy be placed on the rock of Cranberry Head, at the entrance of our harbour. This would be very helpful to the many vessels coming from the Bras d'Or lake; as a rule, these craft follow the shore closely, and are therefore frequently too far in to catch the sound of the whistle on the fairway buoy. By conversation with many masters of vessels frequenting our port, we are assured that this would be very much appreciated by vessels of the class above mentioned.

The automatic gas buoy, placed by your department at the point of the North Bar last summer, has been found very beneficial to all ships using our port, and your progressiveness in this respect was universally approved.

Trusting that what we have so far done will meet with the approval of the department.

I remain your obedient servant,

KENNETH MACLEOD,

Secretary.

SUMMARY of Shipping entered at the port of North Sydney, from June 8, 1912, to December 31, 1912.

Total number of sailing vessels.. . . .	798
“ “ steamers.. . . .	537
	<hr/>
	1,335
Of the above 1,002 were British and 303 were foreign.	
Total Foreign going tonnage entered.. . . .	243,691
Total Coastwise “ “	147,545
	<hr/>
	391,236
Total number of men on foreign going ships.. . . .	16,546
“ “ “ coastwise “	4,635
	<hr/>
	21,181

Nova Scotia Steel and Coal Company's shipments—

Bunkers supplied..	Tons.	35,000
General trade..	"	450,000
		485,000

Nova Scotia Steel and Coal Company's imports—

Iron ore from Wabana..	Tons.	153,000
" " Narvig..	"	7,500
		160,500

STATEMENT of Receipts and Expenditure for 1912.

Date.		Amount.
DR.		\$ cts.
	To cash on hand, as per statement by C. W. Hackett.....	1,577 04
June 18..	" harbour dues from Jan. 1, to May 31.....	709 97
Sept. 4..	" contractor (Stevenson), deposit	250 00
" 16..	" harbour dues	1,094 33
Nov. 6..	"	989 09
Dec 5..	"	406 35
" 31..	"	592 86
Total		5,619 64
CR.		
July 9..	By paid printing.....	5 00
" 16..	" rent of office.....	20 00
Aug. 7..	" John J. Dooley, desk.....	8 00
" 23..	" advertising 'Daily Post'	5 10
" 23..	" engineers' sketches.....	20 00
" 23..	" labour on beach.....	1 75
Sept. 4..	" R. MacDonald, H. Master, sundries.	1 70
" 5..	" J. Macdonald, barrister, drawing agreement.....	10 00
" 7..	" Jas. MacLeod, logs.....	90 30
" 13..	" wages, repairs to breakwater.....	106 50
" 23..	" John Elliot, for piles.....	99 82
" 28..	" wages, repairs to breakwater.. . . .	107 50
" 28..	" sewer rates	20 52
Oct. 14..	" wages, repairs to breakwater.. . . .	91 38
" 21..	" J. A. McDonald, search for records.....	5 00
Nov. 19..	" R. Musgrave, bolts	36 87
Dec. 3..	" Sidney Salter, lumber.. . . .	6 02
" 3..	" Y.M.C.A. for boathouse	5 00
" 3..	" T. Poole, inspecting work on breakwater.....	93 25
" 3..	" Stevenson, as per contract, on breakwater.....	1,865 00
" 3..	" " repairs to breakwater.	400 00
" 3..	" Thompson and Sutherland.....	55 74
" 3..	" " fitting stove.....	9 20
" 3..	" coal, as per account.....	3 06
" 4..	" R. Musgrave, boat davits.....	15 00
" 4..	" C. W. Lovett, stationery	9 40
Dec. 12..	" refund, Stevenson's deposit.	250 00
" 31..	" A. Allen, office tent.....	20 00
" 31..	" Jos. MacPherson, collecting H. dues.....	183 63
" 31..	" R. MacDonald, Harbour Master, salary.....	319 98
" 31..	" A. McDermott, Harbour Commissioner, salary.....	346 78
" 31..	" J. D. Bisset, " "	346 78
" 31..	" K. MacLeod, secretary and commissioner.....	409 88
" 31..	" Balance on hand.....	614 04
Total.....		5,619 64

SESSIONAL PAPER No. 21

PICTOU HARBOUR COMMISSION.

Pictou, April 16, 1913.

Hon. J. D. HAZEN,
Minister of Marine and Fisheries,
Ottawa.

SIR,—I herewith enclose you accounts of the Harbour Commission, port of Pictou
for the year ending 30th December, 1912.

Yours truly,

D. SUTHERLAND,
Chairman.

STATEMENT of Receipts and Expenditures.

1912.	
Dec. 30.—To paid Rod. Grahen, bushing East river.. . . .	\$ 28 50
SS. <i>Hiawatha</i> for taking in buoys.. . . .	50 00
	<hr/>
Balance.. . . .	731 56
	<hr/>
	\$810 06
1912.	
Nov. 30.—By balance in bank	\$435 86
Harbour dues, 1912.. . . .	374 20
	<hr/>
	\$810 06
1912.	
Dec. 30.—By Balance in the Bank of Nova Scotia.. . .	\$731 56
1912.	
April 3.—Commissioners' expense	\$ 10 00
" 11.— " Painting buoys.. . . .	5 00
" 23.— " W. B. Ives.. . . .	2 00
May 3.— "	20 00
Expenses, New Glasgow.. . . .	2 00
" 6.— " SS. <i>Hiawatha</i>	53 00
" Secretary, salary, 1912.. . . .	100 00
" 13.— " A. D. Barry, spars for buoys.. . . .	30 00
" Bushing, West river.. . . .	8 00
" 20.— " Ross Chapman.. . . .	7 50
" Wm. Talbot, for anchors.. . . .	14 00
" 23.— " Ross Chapman.. . . .	5 00
" SS. <i>Hiawatha</i> , putting buoys East river	25 00
" Jno. Brown, painting buoys.. . . .	7 75
Aug. 13.— " D. Nassar	34 06
" P. Brown & Son.. . . .	16 80
	<hr/>
	340 11
CR.	
1912.	
Jan.—By balance in Bank of Nova Scotia.. . . .	\$775 97
	<hr/>
	\$435 86

BELLEVILLE HARBOUR COMMISSION.

BELLEVILLE, ONT., December 12, 1912.

The Deputy Minister of
Marine and Fisheries,
Ottawa.

SIR,—Enclosed please find statement of the Harbour Commissioners, also state-
ment of the sinking fund, and harbour master's report. Trusting you will find the
same in order.

I am, sir,
Your obedient servant,

B. L. HYMAN,
Chairman.

STATEMENT of Harbour Commissioners.

To balance in bank, November 30,		
	1911..	\$138 72
Jan. 22.—	Interest from bank.. . . .	31
June 10.—	Harbour dues.. . . .	52 27
July 15.—	"	366 73
Aug. 14.—	"	372 30
Sept. 15.—	"	439 21
Oct. 15.—	"	613 30
Nov. 11.—	"	262 83
Dec. 4.—	"	158 75
		<hr/>
		\$2,404 42
		<hr/>
Jan. 2.—	By paid George Perry for rubber stamp.. . . .	\$ 0 65
Feb. 22.—	Interest on overdraft at bank	2 70
Mar. 22.—	Commissioners' expenses to Ottawa.. . . .	35 50
April 13.—	R. H. Day, painting and papering harbour master's office.. . . .	6 00
May 25.—	Interest on overdraft at bank.. . . .	3 45
Oct. 1.—	Coupon interest, Bank of Commerce.. . . .	600 00
Dec. 9.—	Sinking fund.. . . .	645 19
" 9.—	City treasurer.. . . .	6 00
" 9.—	Salaries for year.. . . .	653 00
		<hr/>
		1,952 49
Dec. 9.—	Balance in bank, as per book.. . . .	451 93
		<hr/>
		\$2,404 42 \$2,404 42

SESSIONAL PAPER No. 21

STATEMENT of Sinking Fund, to December 12, 1912, Belleville Harbour.

To credit of sinking fund in bank, as per		
statement rendered, December 11.. . . .		\$3,389 26
Feb. 19.—Interest		22 66
May 31.— “		28 50
Nov. 30.— “		51 75
Dec. 9.—Deposit.. . . .		645 19
		<hr/>
		\$4,137 36

The above is a correct statement of the sinking fund to date.

B. L. HYMAN,
Chairman.

BELLEVILLE, Ont., December 12, 1912.

To the Honourable Minister,
Marine and Fisheries,
Ottawa.

SIR,—The undersigned harbour master of the city of Belleville, begs to submit the following report for the year 1912:—

Imports—

19,432 tons of coal.. . . .	\$1,943 20	
889 tons of merchandise.. . . .	88 90	
523 barrels of oil	15 69	
155,000 feet of lumber.. . . .	7 75	
	<hr/>	\$2,055 54

Exports—

10,000 shingles.. . . .	\$ 0 30	
6,000 feet of lumber.. . . .	0 30	
1,370 tons of merchandise.. . . .	137 00	
1,015½ tons of cheese... . . .	101 55	
	<hr/>	\$ 239 15

\$2,294 69

Disbursements.. . . .	29 30	
-----------------------	-------	--

Deposited to the Credit of the Harbour Commissioners.. \$2,265 39

All of which is respectfully submitted,

I have the honour to be, sir,
Your obedient servant,

GEORGE DULMAGE,
Harbour Master.

APPENDIX No. 17.

PORT WARDEN'S REPORTS.

REPORT OF THE ANNAPOLIS ROYAL PORT WARDEN FOR THE
YEAR ENDING DECEMBER 31, 1912.

To the Department of Marine and Fisheries,
Ottawa.

I, Joseph J. Melanson, port warden for the Port of Annapolis Royal, do hereby certify as follows:—

For the year 1912, at this port I received the following fees in respect of my office:—

April 29, 1912.—Received from schooner *Ocean Queen*, surveying and inspecting damaged cargo of fertilizer, \$10; 672 bags badly damaged.

I have no expenses to report in my office.

JOSEPH J. MELANSON,

Port Warden for the Port of Annapolis Royal.

Dated at Annapolis Royal this 16th day of December, A.D., 1912.

CHATHAM, N.B., April 3, 1913.

The Honourable,
The Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to enclose herewith two (2) copies of surveys held by me during 1912.

The season of navigation was an average one, closing December 13.

Yours respectfully,

M. E. GOGGIN,
Port Warden at Chatham.

PORT OF CHATHAM,
NEW BRUNSWICK, CANADA, October 9, 1912.

At the request of Captain A. Juul, master of the Norwegian barque *Skein*, of Skein, Norway, 1,157 tons register, and by order of the Norwegian Vice-Consul, w. the undersigned, R. J. Walls, harbour master at Chatham, N. B. M. A. Goggin, port warden at Chatham, N.B., and Capt. J. C. Kilderup, master of the Norwegian steamer *Progress III*, of Drammen, Norway, proceeded to Nelson, N.B., where vessel was lying at Lynch's Mill wharf, and where, as captain informed us, damage had been sustained in docking, for the purpose of holding a survey.

On examination, we found that a plate on the starboard side had been dented and the seam slightly opened. We recommend that temporary repairs be effected and that the loading be proceeded with as soon as repairs are made. With repairs completed, we consider the ship seaworthy and in every way fit to proceed on her

SESSIONAL PAPER No. 21

voyage to Swansea, Wales, but would further recommend that she be dry-docked, at the first favourable opportunity, where the damage can be permanently repaired.

All of which is respectfully submitted.

R. J. WALLS,
Harbour Master.

M. E. GOGGIN,
Port Warden.

J. C. KALDERUP,
Master Norwegian SS. 'Progress III.'

Schooner 'Loring B. Haskell.'

We, the undersigned, M. E. Goggin, port warden of the said port, and Robert J. Walls, harbour master at said port of Chatham, hereby report that we have this day examined the said schooner *Loring B. Haskell*, which sustained damage on her voyage from Alberton, Prince Edward Island, to Newcastle, and find that the leak in said vessel which, in our opinion, was caused by the vessel straining in the praiseworthy endeavours of the captain to clear the reef at North Cape to accomplish which he was obliged to carry all possible sail, has stopped. We also find that said vessel is not making any water at the present time and therefore consider her seaworthy and fit to proceed to Prince Edward Island; but would recommend that on arrival there, the said vessel should be hauled up and thoroughly examined and repaired, as in our opinion there is no doubt that she has sustained considerable damage, for the reasons aforesaid.

Fees collected for the year, \$37.50.

Dated at Chatham this twenty-third day of November, A.D., 1912.

M. E. GOGGIN,
Port Warden, Chatham.

R. J. WALLS,
Harbour Master, Chatham.

REPORT OF THE PORT WARDEN AT HALIFAX, N.S., FOR THE YEAR
ENDING DECEMBER 31, 1912.

PORT WARDEN'S OFFICE,
HALIFAX, N.S., January 2, 1913.

The Deputy Minister of
Marine and Fisheries,
Ottawa, Can.

SIR,—I have the honour to submit my report for the year ending December 31, 1912, accompanied by a statement, in duplicate, of the receipts and expenditures during that period.

Surveys have been held on twenty-seven steamers and two sailing vessels, which arrived at this port in a damaged condition during the year.

The necessary repairs were made to the vessels, and those of them bound to other ports proceeded to their destination, where they have safely arrived.

There has been shipped from the port of Halifax, to the port of Liverpool, G.B., 39,974 bushels wheat.

No live stock has been shipped from Halifax during the year 1912.

4 GEORGE V., A. 1914

RECEIPTS and Expenditures of the Port Warden at Halifax, N. S., from January 1, 1912, to December 31, 1912.

Dr.		Cr.	
To amount received as fees	\$2,980 65	By paid assistants and office expenses..	\$1,583 10
		Amount to port warden.....	1,397 55
	\$2,980 65		\$2,980 65

I hereby certify that the above is a true and correct statement of the receipts and expenditures of the port warden at Halifax, N.S., from January 1, 1912 to December 31, 1912.

NEIL HALL,
Port Warden.

REPORT OF THE PORT WARDEN OF PORT HAWKTSBURY, FOR THE YEAR ENDING DECEMBER 31, 1912

PORT HAWKESBURY, January 2, 1913.

A. JOHNSTON, Esq.,
Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit my annual report of the doings of this office, with a statement of the fees collected by me, and also the attendant expenses during the past year.

I have the honour to be, sir,
Your obedient servant,

NICHOLAS MARTIN.

Three surveys on Brigantine <i>Miriam G. H.</i>	\$33 00	
Two surveys on Schooner <i>Annie F. Conlon</i>	33 00	
Three surveys on Schooner <i>Marguerite</i>	38 00	
One valuation survey on Schooner <i>Marguerite</i> ..	6 00	
	—————	\$110 00
Paid William Duff, shipwright	10 00	
“ J. J. Hennesey, master mariner	30 00	
“ John Langley, shipwright	10 00	
“ John Lamey, sailmaker	5 00	
“ Alexandrew Bain, agent, U.S.A. Consul ..	5 00	
	—————	60 00
Balance		50 00
		—————
		\$110 00
Amount reverting to port warden ..	50 00	

I hereby certify the above to be correct to the best of my knowledge and belief.

NICHOLAS MARTIN,
Port Warden.

SESSIONAL PAPER No. 21

REPORT OF THE PORT WARDEN AT LOUISBURG, N.S., FOR THE YEAR
ENDING DECEMBER 31, 1912.

LOUISBURG, N.S., January 25, 1913.

Deputy Minister, Marine and Fisheries,
Ottawa.SIR,—I beg to submit the following report as port warden for the port of
Louisburg, for the year ending December 31, 1912:—

Jan. 20—SS. *Rossano*, certificate of seaworthiness.
 Feb. 1— “ *Louisburg*, survey of damages sustained during
 passage.
 Feb. 10— “ *Louisburg*, certificate of seaworthiness.
 Feb. 7— “ *Wobun*, certificate of seaworthiness.
 Feb. 20—Schr. *Rothsay*, certificate of seaworthiness.
 Feb. 22—SS. *Cacouna*, survey of damages.
 Feb. 24— “ *Cacouna*, certificate of repairs and seaworthiness.
 Mar. 2— “ *Cape Breton*, certificate of seaworthiness.
 Apl. 5— “ *Haulween*, survey of damages caused by ice.
 Apl. 25— “ *Sophia H.*, survey of damages by ice.
 Sept. 5—Schr. *Monica A. Thomas*, survey damages caused by
 gasoline explosion; vessel total loss.

Jan. 20.—SS. <i>Rossano</i> , certificate of seaworthiness	\$8.00
Feb. 1.— “ <i>Louisburg</i> , survey	8.00
“ 10.— “ <i>Louisburg</i> , certificate of seaworthiness	8.00
“ 7.— “ <i>Wobun</i> , certificate of seaworthiness	8.00
“ 20.—Schr. <i>Rothsay</i> , certificate of seaworthiness	8.00
“ 22.—SS <i>Cacouna</i> , survey	8.00
“ 24.— “ <i>Cacouna</i> , certificate of seaworthiness	8.00
Mar. 2.— “ <i>Cape Breton</i> . certificate of seaworthiness	8.00
“ 5.— “ <i>Haulween</i> , survey	8.00
“ 25.— “ <i>Sophia H.</i> , survey	8.00
Sept. 5.—Schr. <i>Monica A. Thomas</i> , survey	8.00
	<hr/>
	88.00

The charges in the above report do not include amounts paid to assistants in
holding surveys.

I have the honour to be, sir,

Your obedient servant,

DONALD J. MATHESON,
Port Warden.

4 GEORGE V., A. 1914

REPORT OF MONCTON, N.B., PORT WARDEN FOR THE YEAR ENDING
DECEMBER 31, 1912.

MONCTON, N.B., Dec. 31, 1912.

To the Honourable,
The Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—In pursuance of the provisions of section 899, chapter 113 of the Canadian Shipping Act, I beg to submit my annual return for the year 1912, as port warden for the port of Moncton, N.B.

I beg to report that I have not been called upon in my official capacity, as port warden for the port of Moncton for the year 1912.

No fees collected.

I have the honour to be, sir,
Your obedient servant,

R. C. BACON,
Port Warden.

REPORT OF THE PORT WARDEN AT MONTREAL FOR THE YEAR
ENDING DECEMBER 31, 1912.

MONTREAL, January 7, 1913.

Honourable J. D. HAZEN,
Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour, by direction of the council of this Board, and in compliance with section 31 of the Act governing the Port Warden Office, 45 Vic., chap. 45, to transmit herewith, documents as follows:—

1. Port Warden's annual report for the year 1912.
2. Audited statement of receipts and expenditure of the port warden office for the year ending December 31, 1912.
3. Statement of investments of Port Warden surplus funds.

I have the honour to be, sir,
Your obedient servant,

GEO. HADRILL,
Secy. Montreal Board of Trade.

OFFICE OF THE PORT WARDEN,
MONTREAL, December 30, 1912.

To the President and Council
of the Montreal Board of Trade.

GENTLEMEN,—I have the honour to submit the annual report of the business of the port warden's office, with the statements of exports, receipts and expenditure for the year 1912.

Owing to the tardy outgoing of the river ice, which did not break away till the 28th April, the first arrivals from sea were somewhat delayed. Navigation opened on the 30th April, with the arrivals from Quebec of the SS. *Gaspesien* and SS. *Lady of Gaspé*, to load at this port.

SESSIONAL PAPER No. 21

The first ocean steamship to arrive was the North German Lloyd's SS. *Zieten*, from Hamburg, on the 1st of May, followed the following day by the SS. *Pretorian* and the SS. *Whakatane*.

The opening of the straits of Belle Isle for navigation was delayed by the large quantity of field ice and icebergs drifting south and blocking the straits. The first steamship to pass through from the eastward was the SS. *Cairndhu* which passed Belle Isle at 7 p.m., 21st June. Navigation was impeded, more or less, for a good part of the season, owing to the large quantities of ice passing south.

The London dock strikes materially affected the sailings of the steamers trading to that port, a number of the vessels having been detained in dock with their cargoes on board; and in some instances bringing part of their cargoes back to this port.

There is no disaster of importance to report between this port and Quebec this season, but there was the unfortunate disasters of the stranding of the SS. *Bellona*, SS. *Gladstone*, and SS. *Royal George*, a short distance below Quebec, which are much to be deplored; all of these vessels were floated.

The last vessel to sail hence and close the navigation this season was the SS. *Bray Head*. She sailed for Dublin, via Quebec, on the 3rd December, the same time and date as last year.

Four hundred and fifteen foreign-going vessels reported at this office this season, with a tonnage of 1,790,518 tons, against 398 vessels and 1,714,354 tons last season, an increase of 17 vessels, and 76,164 tons.

The business with the lower ports this season consisted of, entered, 327 vessels of all classes with a tonnage of 617,236 tons, against 352 vessels and 637,431 tons, a decrease of 25 vessels, and 20,195 tons.

Clearances of vessels loaded for the lower ports this season was: 104 vessels of all classes with a tonnage of 82,331 tons, against 108 vessels of 85,708 tons, last season, a decrease of 4 vessels and 3,377 tons.

The shipments of various kinds for the past season manifested and reported at this office are as per attached statement.

All of which is respectfully submitted.

ARCHIBALD REID,
Port Warden.

COMPARATIVE statement of shipments, 1911 and 1912, as per manifests reported at the Port Warden's Office.

Description.	1912.	1911.	Increase, 1912.	Decrease. 1912.
Wheat..... Bush.	30,652,672	18,017,235	12,635,437	
Buckwheat..... "		29,099		29,099
Peas..... "	19,813	37,097		17,284
Barley..... "	1,217,548	81,864	1,135,684	
Oats..... "	6,565,138	5,726,780	838,358	
Corn..... "		5,705,864		5,705,864
Flaxseed..... "	62,066	17,230	51,836	
Rye..... "	126,313		126,313	
	38,650,550	29,615,169	14,787,628	5,752,247
			5,752,247	
Total increase for the year 1912.....			9,035,381	
Flour and meal..... Bbls.	1,761,727	1,836,732		75,005
Ashes..... "	415	591		176
Apples..... "	328,788	259,095	69,693	
Cheese..... Boxes	1,722,950	1,797,611		74,661
Butter..... Pkgs.	70	132,847		132,777
Eggs..... "		4,791		4,791
Boxmeats..... "	190,601	225,605		35,004
Lard..... "	700,645	559,643	141,002	
Pulp..... Tons.	6,645	6,102	543	
Paper..... "	22,637	18,867	3,770	
Sundries..... "	121,723	104,260	17,463	
Hay..... "	39,698	58,903		19,205
Oilcake..... "	25,609	19,327	6,282	
Minerals..... "	16,099	14,127	1,972	
Dried grains..... "	732	232	500	
Lumber..... Ft. B M.	101,400,889	95,871,940	5,528,949	
Cattle..... Head.	6,473	45,283		38,810
Horses and mules..... "	481	458	23	
Sheep..... "	178	3,454		3,276

STATEMENT of Oversea or foreign-going Vessels.

Description.	1912.		1911.	
	No.	Tons.	No.	Tons.
Steamers ...	415	1,790,518	398	1,714,354

Increase of 17 vessels and 76,164 tons.

STATEMENT of Lower Port Arrivals.

Description.	1912.		1911.	
	No.	Tons.	No.	Tons.
Steamers.....	291	613,826	321	634,544
Sailing vessels.....	36	3,410	31	2,887
	327	617,236	352	637,431

Decrease of 25 vessels and 20,195 tons.

SESSIONAL PAPER No. 21

CLEARANCES for Lower Ports.

Description.	1912.		1911.	
	No.	Tons.	No.	Tons.
Steamers.....	84	80,438	88	83,814
Sailing vessels.....	20	1,893	20	1,894
	104	82,331	108	85,708
Decrease of 4 vessels and 3,377 tons.				
Revenue, 1912.....				\$9,864 24
" 1911.....				9,403 28
Increase.				\$460 96

STATEMENT of Receipts and Expenditure for the year ending December 31, 1912.

DR.

CR.

Dec. 31, 1911.

Dec. 31, 1912.

To Balance cash in bank.....	\$ 12,306 14	Ry paid salaries, etc., Port Warden's and staff.....	\$10,579 94
Balance cash in Port Warden's hand.....	140 06	Board of Trade, secretarial expenses.....	1,000 00
Outstanding accounts 1911.....	\$ 12,446 20	Rent, fuel and taxes.....	321 97
Cash for secondhand office desk.....	22 73	Telephones, light, cleaning offices, etc.....	226 31
	20 00	Lloyd's register and shipping papers.....	42 75
		Books, printing and stationery.....	128 75
		Cab and carfares.....	18 50
		Miscellaneous expenses.....	31 20
		Alf. W. Hadrill, auditor.....	100 00
			\$ 12,449 24
Revenue derived as under.—		Bad accounts written off 1911.....	6 27
30,652,672 bushels wheat.....		Outstanding accounts 1912.....	260 52
19,814 " peas.....			
1,217,548 " barley.....		Balance cash in bank.....	\$ 14,715 18
6,565,138 " oats.....		" " Port Warden's hands.....	39 46
69,066 " flaxseed.....			\$ 14,754 64
126,313 " rye.....			
25,609 tons oilcake.....			
16,099 " minerals.....			
39,698 " hay.....			
732 " dried grains.....			
6,954 " oxen, horses and mules.....			
178 " sheep.....			
415 bbls. ashes.....			
1,761,727 " flour and feed.....			
328,788 " apples.....	821 97		
294,819 tons sundries.....	5,896 38		
101,400,889 feet sawn lumber.....	506 89		
Port Warden's fees (inwards).....	186 00		
" " (onwards).....	2,249 00		
Special surveys.....	52 00		
Damaged cargo certificates.....	152 00		
Interest, bank account.....	9,864 24		
" treasurer board of trade.....	\$ 307 00		
	4,810 50		
	5,117 50		
	\$ 27,470 67		
To Balance.....	\$ 14,754 64		

Audited and found correct.

MONTREAL, Jan. 3, 1913.

ALF. W. HADRILL,
Auditor.
ARCHIBALD REID,
Port Warden.

STATEMENT of Investments of the Surplus Funds of the Port Warden's Office at Montreal, and the interest accruing therefrom for the year ending December 31, 1912.

Feb. Feb.	15, 18,	1880 1884	Expended \$ 2,380 34 in purchase of	Dominion Government stock.	\$ 2,300 00 at 3½% per annum for 12 months.	\$	80 50
			"	City of Montreal bonds, Nos. 1720, 1721, 1722,			
March	14,	1887	"	1723 and 1724, for \$1,000 each.	"		200 00
Jan.	6,	1906	"	City of Montreal Consolidated Fund Stock.	"		400 00
Jan.	23,	1907	"	Montreal harbour bonds.	"		400 00
Jan.	5,	1908	"	"	"		160 00
April	27,	1909	"	"	"		150 00
July	20,	1910	"	Dominion Cotton bonds.	"		200 00
			Loans to Montreal Board of Trade building fund.	"	"		420 00
					"		2,800 00
			Total investments.	\$115,300 00	Total interest.	\$	4,810 50

JOSEPH QUINTAL,
Treasurer Montreal Board of Trade.

GEO. HADRILL,
Secretary Montreal Board of Trade.

MONTREAL, January 7, 1913.

4 GEORGE V., A. 1914

REPORT OF THE PORT WARDEN OF THE PORT OF NANAIMO, B.C., FOR THE YEAR ENDING DECEMBER 31, 1912.

NANAIMO, B.C., January 2, 1913.

The Deputy Minister,
Marine and Fisheries Department,
Ottawa.

SIR,—I have the honour to submit my report as port warden for the port of Nanaimo and Departure Bay. Total amount collected during the past year for surveys on vessels, \$30.

I am, sir, your obedient servant,

J. S. KNARSTON,
Port Warden.

REPORT OF THE PORT WARDEN AT NORTH SYDNEY, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.

Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I herewith present my annual report.

For survey, SS. *Whakatane*, *Savoyarde*, *Knutsford*, *Sibelyia*, *Lena*, *Sangasso*, *Romsdal*, *Taoremimo*, *Falk*; schooners, *Hattie C.*, *Energy*, *Miriam G.*

Collected \$87.

NORTH SYDNEY,
December 31, 1912.

W. H. KELLY,
Port Warden.

REPORT OF THE PORT WARDEN FOR PRINCE EDWARD ISLAND FOR THE YEAR ENDING DECEMBER 31, 1912.

PORT WARDEN'S OFFICE, PRINCE EDWARD ISLAND,
December 31, 1912.

To Deputy Minister of Marine,
Ottawa.

SIR,—I have the honour to submit my annual report of the business of my office during the past year.

I am glad to report there has been a large increase of the shipment of produce from the island, principally to the provincial and Newfoundland markets this season. The farmers have realized good prices. The produce is shipped mostly in bags, over which we have no control.

Navigation remained open this year later than usual, which enabled vessels to load cargoes and proceed to sea in safety.

I have the honour to be, sir,

Your obedient servant,

H. P. WELSH.

SESSIONAL PAPER No. 21

RECEIPTS and Expenditure of the Port Warden's Office, P. E. Island, for year ending December 31, 1912.

	\$ cts.		\$ cts.
1912—To Fees derived from vessels with general cargoes	30 00	1912—By Expense of office	5 00
Survey on schooner <i>Stanley Mae</i> as to seaworthiness	5 00	Commission to Deputy	13 00
Survey on steamer <i>Harland</i> , damaged	8 00		
Other surveys	8 00	Balance	33 00
	51 00		51 00

I certify that the above is a correct statement.

H. P. WELSH.

CHARLOTTETOWN, P.E.I., December 31, 1912.

REPORT OF THE QUEBEC PORT WARDEN FOR THE YEAR ENDING
DECEMBER 31, 1912.

A. JOHNSTON., Esq.
Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—As requested by the 30th section of the port warden's rules, I beg respectfully to submit the following annual statement of the business transacted in the office during the year ending the 30th December, 1912.

Fifty-four steamers were surveyed for clearance outwards after taking part cargo on board at this port, having previously shipped part cargo of grain and other goods at Montreal.

Eighty-six steamers and one schooner were surveyed, their hatches opened and cargo examined on their arrival from sea.

Five steamers, one steam barge, and one yacht were surveyed on account of collision damages.

Three steamers and one schooner were surveyed on account of grounding and stranding in the river St. Lawrence, below and above Quebec.

Two steamers and one barge were surveyed and value estimated for general average purpose.

Fifteen surveys were held on damaged goods on wharfs and in stores.

The receipts and disbursements of this office are as follows:—

Receipts	\$1,603 50
Expenses	274 00
	<hr/>
	\$1,329 50

Your obedient servant,

ALEX. RUSSELL,
Port Warden.

PORT WARDEN'S REPORT ST. ANDREW'S, NEW BRUNSWICK, FOR THE YEAR 1912.

Jan. 24.—Surveyed hatches, Schooner <i>Walter I. Alice</i> , Capt. Emerson, from Boston; hatches in good order and cargo in good order under hatches; phosphite.	\$2.50
Jan. 26.—Surveyed hatches, Schooner <i>Edward Steward</i> , from Boston, Capt. Robbins; cargo, phosphite; hatches and cargo in good order.	2.50
March 27.—Surveyed hatches, <i>A. I. Sterling</i> , cargo phosphite, from Boston; hatches and cargo in good order	2.50
March 31.—Surveyed hatches, Schooner <i>Seguin</i> , Capt. Cole, from Baltimore; hatches and cargo in good order	2.50
March 31.—Surveyed hatches, Schooner <i>I. W. H. White</i> , Capt. Clark; hatches and cargo in good order	2.50
	<hr/> \$12.50

I certify this is a correct statement of all dues collected for the year 1912.

JOHN WREN,
Port Warden.

PORT WARDEN'S REPORT OF SYDNEY, N.S., INTERNATIONAL PIER.

SYDNEY, N.S., January 6, 1912.

A. JOHNSTON, Esq.,
Deputy Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—Herewith I beg to hand you my report as port warden for above port for year ending December 31, 1912.

		Vessels.	Tonnage.	Amount of Fees.
				\$ cts.
April	10	Megrez.	1,662	8 00
"	13	Cape Breton	1,109	8 00
"	15	Muirfield.	1,956	8 00
"	18	Caithness.	2,222	8 00
"	20	Mohacsfield.	2,345	8 09
"	22	Chelford.	1,907	8 00
"	24	Basuda.	1,839	8 00
"	30	Othello.	2,391	8 00
"	30	Carleton.	830	8 00
May	1	Sophie H.	1,864	8 00
"	3	Canada Cape.	2,795	8 00
"	20	Belswing	1,252	8 00
"	20	Westmount.	1,172	8 00
"	22	Glenmount.	1,246	8 00
"	25	Prince Rupert.	1,172	8 00
"	28	Stormount	1,230	8 00
"	29	Fairmount.	1,184	8 00
"	29	Athenia.	1,467	8 00
"	31	Kinmount.	1,597	8 00
"	31	Regnator.	1,278	8 00
"		Ninian.	4,068	8 00
June	7	Ameland.	1,632	8 00
"	7	Helmer March	1,349	8 00
"	8	Dina.	748	8 00

SESSIONAL PAPER No. 21

		Vessels	Tonnage.	Amount of Fees.	
				\$	cts.
June	8	Glenaeu	2,065	8	00
"	12	Soburg	1,232	8	00
"	12	Norburn	1,222	8	00
"	17	Strathspey	2,852	8	00
"	18	Westmount	1,172	8	00
"	19	Thorle Fagelund	2,826	8	00
"	20	Glenmount	1,246	8	00
"	24	Lorle	1,694	8	00
"	25	Carleton	830	8	00
"	25	Sonland	1,565	8	00
"	26	Benguela	3,533	8	00
"	27	Prince Rupert	1,172	8	00
"	28	Wilhelmina	1,682	8	00
July	4	Stormount	1,230	8	00
"	4	Magda	1,506	8	00
"	5	Tulgela	2,148	8	00
"	6	Fairmount	1,184	8	00
"	11	Kinmount	1,597	8	00
"	16	Westmount	1,172	8	00
"	19	Rosemount	989	8	00
"	30	Prince Rupert	1,172	8	00
"	31	Bradland	1,472	8	00
Aug.	1	Carleton	830	8	00
"	3	Monarch	4,776	8	00
"	12	Kinmount	1,597	8	00
"	13	Andoni	2,024	8	00
"	14	Glenmount	1,246	8	00
"	19	Raithwaite	1,960	8	00
"	23	Rosemount	989	8	00
"	25	Stormount	1,230	8	00
"	30	Westmount	1,172	8	00
"	31	Prince Rupert	1,172	8	00
Sept	4	Kaduna	2,308	8	00
"	5	Carleton	830	8	00
"	18	Glenmount	1,246	8	00
"	24	Fairmount	1,184	8	00
"	26	Stormount	1,230	8	00
Oct.	3	Westmount	1,172	8	00
"	11	Prince Rupert	1,172	8	00
"	17	Ovid	2,686	8	00
"	22	Carleton	830	8	00
"	25	Brierton	2,030	8	00
Nov.	17	Sorland	1,546	8	00
"	18	Cacouna	931	8	00
"	29	Benguela	3,533	8	00
"	30	Manchester Inventor	2,775	8	00
Dec.	3	Nenango	1,905	8	00
			118,250	568	00

I certify the above is a true and correct account of the Port Warden's record for the year ending December 31, 1912.

(Signed)

NELSON H. TOWNSEND.

4 GEORGE V., A. 1914

REPORT OF THE PORT WARDEN OF VANCOUVER, B.C., FOR THE YEAR
ENDING DECEMBER 31, 1912.

PORT WARDEN'S OFFICE,
VANCOUVER, B.C., January 3, 1913.

The Honourable
The Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—I have the honour to enclose herewith a statement of my doings in the office of port warden for the port of Vancouver, in the province of British Columbia, in accordance with instructions contained in the Canada Shipping Act, part XII, section 899.

STATEMENT of the Port Warden for the Port of Vancouver, British Columbia.

Total number of vessels and cargoes on which hatches were surveyed, and a general survey was carried out, one hundred and fifteen (115).

Total fees received for survey and report on hatches.. . .	\$1,810 00
Fees to deputy port warden.. . . .	\$ 677 00
Stationery and sundries.. . . .	30 00
Travelling expenses.. . . .	96 00
Postage stamps.. . . .	12 00
By balance received by port warden.. . . .	995 00
	<hr/>
	\$1,810 00 \$1,810 00

The above statement is a true record of the office of port warden for the port of Vancouver, B.C., for the year one thousand nine hundred and twelve (1912).

A. HEURTLEY REED,
Port Warden.

Dated at Vancouver this third day of January in the year one thousand nine hundred and thirteen.

REPORT OF THE PORT WARDEN OF VICTORIA, B.C., FOR THE YEAR
ENDING DECEMBER 31, 1912.

VICTORIA, B.C., January 3, 1913.

The Deputy Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—I have the honour of submitting herewith my report as port warden for the ports of Victoria and Esquimalt, B.C., for the year ending on the 31st of December, 1912.

Amount of fees received for surveys on hatches and cargoes..	\$440
Received for 3 certified copies of reports of surveys.. . . .	3
	<hr/>
Total amount of fees received.. . . .	\$443

I have the honour to be, sir,
Your obedient servant,

CHAS. E. CLARKE,
Port Warden.

SESSIONAL PAPER No. 21

REPORT OF THE PORT WARDEN, YARMOUTH, N.S., FOR THE YEAR
ENDING DECEMBER 31, 1912.

1912.

July 3.—To surveys on ss. <i>Amelia</i> , stranded on Boar's Head, Bay of Fundy	\$24 00	
Assistance		\$30 00
July 10.—British schooner <i>C. L. Pickels</i> , stranded on passage from gulf port of Mississippi, four surveys	32 00	
Assistance		45 00
Aug. 13.—ss. <i>Prince George</i> , stranded in Yarmouth Harbour .. .	24 00	
Assistance		30 00
Aug. 14.—Surveys on ss. <i>Amelia</i> , stranded on Hospital reef, outside Clark harbour	32 00	
Assistance		30 00
Oct. 22.—Schooner <i>Harvester</i> , stranded and condemned and sold by public auction	16 00	
Nov. 13.—Surveys Norwegian bark <i>Holt</i> , at Hedgeport, Tusket River	32 00	
Assistance		40 00
Dec. 31.—Total received for 1912	\$160 00	\$175 00

R. M. FERGUSON,

Harbour Master and Port Warden.

APPENDIX No. 18.
ANNUAL REPORTS OF PILOTAGE AUTHORITIES FOR THE YEAR 1912.
A SUMMARY of information contained in following Pilotage Reports.

Pilotage District.	Number of Commis- sioners.	Number of Pilots.	Number of apprentice Pilots.	Number of Vessels Paid pilotage.	Total Earnings. \$ cts.	Total Receipts. \$ cts.	Total Expenditure. \$ cts.	Pilotage Rates.
Arichat, N.S.	3	3	None.	3	No records.....	Norecords	See Appendix No. 18, and consult Index as rates are too long to insert here.
Bathurst, N.B.	4	3	"	14	874 31	874 31	874 31	
Bras D'Or, N.S.	3	7	"	"	"	"	"	
Buctouche, N.B.	4	3	"	3	51 00	51 00	51 00	
Caraquet, N.B.	4	3	"	6	9 00	9 00	9 00	
Halifax, N.S.	6	18	"	1752	41,145 50	42,935 13	41,247 78	
Harvey, N.B.	3	5	None.	10	490 06	490 06	490 06	
Louisburg, N.S.	5	8	"	156	5,384 40	6,378 80	6,378 80	
Miramichi.....	4	18	"	127	13,650 19	13,650 19	13,650 19	
Montreal, P.Q.	M. of M. & F.	50	20	1099	88,292 05	88,292 05	88,292 05	
Minas Basin, N.S.	5	0	"	None.....	None.	None.	None.	
Nanaimo, B.C.	5	7	"	428	17,156 51	26,023 07	25,644 37	
New Westminster, B.C.	3	1	"	23	571 61	571 61	571 61	
Parisboro, N.S.	5	1	"	7	401 87	401 87	401 87	
Pictou, N.S.	5	5	"	34	1,009 45	1,936 21	482 69	
Port Medway, N.S.	3	2	"	1	20 00	20 00	20 00	
Pugwash, N.S.	5	5	"	9	552 66	599 46	599 46	
Quebec, P.Q.	M. of M. & F.	76	22	994	129,490 45	149,465 67	147,561 02	
Restigouche, N.B.	5	5	None.....	103	5,248 91	5,889 65	5,889 65	
Richibucto, N.B.	5	4	"	3	75 00	75 00	75 00	
Sackville, N.B.	3	2	"	9	87 50	87 50	87 50	
Shediac, N.B.	5	3	"	5	275 05	275 05	275 05	
Shepody Basin, N.B.	5	4	"	56	873 36	1,273 36	60 00	
St. Ann's, N.S.	3	4	"	15	686 00	686 00	686 00	
St. John, N.B.	7	20	3	546	37,238 44	43,797 00	37,030 73	
Tidnish, N.S.	5	1	None.....	1	25 00	25 00	25 00	
Sydney and North Sydney, N.S.	5	36	8	1,160	38,634 00	42,259 12	41,714 92	
Vancouver, B.C.	5	6	None.....	1,060	35,547 30	37,180 07	36,093 81	
Victoria, B.C.	5	4	"	654	17,401 20	19,569 63	18,176 00	
Wallace, N.S.	4	3	"	None.....	None	None.....	None.....	
Totals.....	124	307	57	8,278	435,181 82	482,815 81	465,387 87	

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF BATHURST, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	When appointed.
John J. S. Hachie.....	O. C. 16th May, 1903.
Henry White	O. C. 20th Sept., 1904.
Richard Southwood	O. C. 21st June, 1909.
Thomas Canty.....	O. C. 30th Aug., 1907.
Secretary, Joseph Henderson.....	

NAMES OF PILOTS AND EARNINGS.

Names of Pilots.	Earnings.
Wm. Daly.....	\$188 53
Peter Roy.....	123 24
D. R. Ronalds	166 54
	478 31

Vessels which paid Pilotage for the Year.	Tonnage.	Amount paid.
4 British steam vessels	7,760	195 39
4 British sailing vessels.....	1,575	99 70
1 Foreign steam vessel.....	1,202	41 62
5 Foreign sailing vessels	4,641	141 60
		478 31

RECEIPTS AND EXPENDITURES.

Receipts.	\$ cts.	Expenditures.	\$ cts.
Received from pilotage.	478 31	Paid pilots	478 31

PILOTAGE BOATS.

Motor Boat No. 1.....	} Besides having motor power they have sails.
" No. 2.....	
" No. 3.....	

Navigation opened 4th May and closed 4th December, 1912.

23rd December, 1912.

JOSEPH HENDERSON, *Secretary.*

The rates of pilotage dues for the time being in force in this district including the amounts and descriptions of all charges upon shipping made in respect of pilotage.

Inwards—

Outwards—

Steamers.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
BRAS D'OR, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.

Names.	When appointed,
Capt. Daniel McRae.....	O. C. 31 Aug. 1906.
Donald J. McRae.....	" "
George Hallifield.....	" "

Names.	When appointed.	Age.
Archie Livingstone.....	1894	63
George McKay.....	1894	61
Daniel Campbell.....	1894	49
William Carey.....	1895	60
Ingraham Carey.....	1897	43
Nicholas Murphy.....	1909	53
Chas. S. McNeil ...	1913	43

Baddeck, May, 1913.

21—24

4 GEORGE V., A. 1914

SCALE of Pilotage Fees for the Pilotage district embracing the ports, harbours and bays in Bras d'Or Lakes in the Great and Little Bras d'Or belonging to the County of Victoria.

Vessels of	Big Bras d'Or.	Port Devis.	St. Ann's.	Little Narrows.	Grand Narrows to bound- ary line of District.	Baddeck.
Tons.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
120—200	5 00	7 00	7 00	11 00	12 50	8 00
200—250	6 00	8 00	8 00	14 00	14 50	11 00
250—300	7 00	9 00	9 00	16 00	16 50	12 00
300—350	8 00	12 00	12 00	17 00	17 00	12 00
350—400	9 00	12 00	12 00	18 00	18 00	13 00
400—450	11 00	14 00	14 00	19 00	19 50	15 00
450—500	11 00	14 00	14 00	19 00	19 50	15 00
500—600	12 00	15 00	15 00	19 00	20 00	16 00
600—700	13 00	16 00	16 00	20 00	21 00	17 00
700—800	14 00	17 00	17 00	21 00	22 00	18 00
800—900	15 00	18 00	18 00	22 00	23 00	19 00
900—1,000	16 00	19 00	19 00	23 00	24 00	20 00
1000—1,500	18 00	21 00	21 00	24 00	25 50	22 00
1500—2,000	21 00	24 00	24 00	26 00	27 50	25 00

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF BUCTOUCHE, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	When appointed.
John C. Ross	O. C. 28th April, 1877.
B. H. Foley	O. C. "
James McNairn	O. C. "
D. T. Landry	O. C. 2nd July, 1887.

NAMES OF PILOTS, AGE AND EARNINGS.

Names.	When appointed.	Age.	Earnings.
Joseph Crossman	1898	61	\$ 8 00
John Mooney	1907	38	43 00
Peter A. Smith	1907	46	
			\$ 51 00

No apprentices in this district.
No white flag ships licensed for the year.

SESSIONAL PAPER No. 21

Vessels which paid pilotage fees for the year.	Tonnage.	Amount paid.
		\$ cts.
1 British steam vessel.....	70	8 00
1 British sail vessel.....	80	5 00
1 Foreign sail vessel....	140	38 00
		\$ 51 00

PILOTAGE BOATS.

Numbers 1 & 2 Era.
Navigation opened April 14, closed Dec. 10.

January 4, 1913. JOHN C. ROSS, *Secretary.*

The rates of pilotage dues for the time being in force in this district including the amounts and descriptions of all charges upon shipping made in respect of pilotage. Pilotage fees are charged as per section 12 of rules and regulations for the district, viz., one dollar and fifty cents (\$1.50) per foot draught of water, both inward and outward bound. No other compulsory charge in respect of pilotage. When vessel is taken by pilot over the reef from anchorage ground outside the bar the charge is five dollars, but this is not compulsory.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE PILOTAGE DISTRICT OF CARAQUET, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

COMMISSIONERS.

Names.	When appointed.
C. Hubbard.....	O. C. Nov. 11, 1881.
Geo. La Riche.....	O. C. April 6, 1903.
H. Duguay.....	O. C. June 29, 1910.
C. L. Robichaud.....	O. C. June 29, 1910.

Names of pilots.	When appointed.	Age.	Earnings.
Alex. J. Nelson.....	1897	38	\$54 40
Joseph Chiasson.....			33 00

No apprentices for this district.
No white flag ships licensed.

4 GEORGE V., A. 1914

Vessels which paid fees for year.	Tonnage.	Amount paid.
2 British sailing vessels	295	
4 Foreign sailing vessels	1,859	
Total amount		\$ 87 40

Receipts.	Expenditures.	\$ cts.
Received from pilots—		
Pierre E. LeBouthiller	Stationery	1 00
Theo. H. LeBouthiller	Allowance to Secretary	8 00
Joseph E. LeBouthiller		
Charles Vebert		
Joseph T. Chiasson		
Edward LeBouthiller		
James T. Lanteigne		
Lazuar Gauvin		
Alex. J. Wilson		
\$ 9 00		9 00

Navigation opened May 1, and closed December 1.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping, made in respect of pilotage:—

Pilotage inwards, \$1.20, outwards, \$1 foot.

This is the only charge in respect to pilotage in this district.

January 15, 1913.

C. HUBBARD,

Secretary.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF HALIFAX, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	When appointed.
M. C. Grant	O. C., June 20, 1892.
J. J. Bremner	O. C., March 19, 1883.
James Ball	Appointed by Chamber of Commerce, July 27, 1904.
J. E. DeWolfe	" City Council, May 16, 1908.
N. Hall	" Chamber of Commerce, Nov. 26, 1908.
F. Rudolph	O. C., October 1, 1909.

SESSIONAL PAPER No. 21

NAMES OF PILOTS AND EARNINGS, WHEN APPOINTED AND AGE.

Names.	When appointed.	Age.	Total earnings.
Jas. G. Renner..	1911	27	
Lamont Power.....	1911	24	
Lawrence Hayes.....	1905	33	
Frank Thomas.....	1898	35	
Bernard Brackett.....	1905	30	
Wm. Hayes.....	1898	37	
Wallace Brackett	1911	26	
John Holland.....	1905	30	
Edward Renner	1911	25	
John Hayes.....	1875	61	
James Spears.....	1882	55	
William Gorman.....	1898	39	
C. F. Martin.....	1890	45	
William White.....	1884	54	
Thos. Hayes.....	1884	52	
Thos. Rayno.....	1884	51	
Frank McKay.....	1898	39	
Henry Latter.....	1890	43	\$40,761.50
Apprentice pilots :—			
Cyril Hanrahan.....	1912	22	96.00
William Latter	1912	22	96.00
Walter White.....	1912	22	96.00
John Brown.....	1912	20	96.00

No white flag ships licensed during the year.

VESSELS WHICH PAID PILOTAGE FEES DURING YEAR.

No.		Tonnage.	Amount paid.
			\$ cts.
1,397	British steam vessels.....	3,305,272	33,115 90
186	British sailing vessels.....	42,200	1,750 00
154	Foreign steam vessels.....	432,172	5,569 60
15	Foreign sailing vessels...	6,500	326 00
			\$ 40,761 50

Statement of Pensions or Relief Fund :—

Dominion Stock.....	\$ 22,212 36
Savings Bank	10,027 42
Deposit	5,106 25
Cash.....	441 11
	\$37,787 14

DETAILED STATEMENT OF RECEIPTS AND EXPENDITURES.

Receipts.	Amount.	Expenditure.	Amount.
	\$ cts.		\$ cts.
Total from all sources	41,844 44	Paid pilots	37,580 73
Balance for 1911-12	1,090 69	Superannuation	1,419 69
		Rent	425 00
		Apprentices	352 00
		Auditor	50 00
		McInnis, Nellis & Fuller	70 00
		Telephone and tolls	54 05
		Books and stationery	19 40
		Office expense	194 40
		Sundries	82 51
		Secretary	1,000 00
		Balance	1,687 35
Total	12,935 13	Total	42,935 13

FRANK J. PHELAN,
Secretary.

January 7, 1913.

Pilotage Rates.

	Inward.	Outward.
Vessels under 200 tons	\$ 9 60	\$ 6 00
“ 200 tons under 300 tons	13 20	8 40
“ 300 “ 400 “	16 80	10 80
“ 400 “ 500 “	19 20	12 00
“ 500 “ 600 “	21 60	13 20

Over 600 tons an additional 60 cents for every 100 tons (or fractional part thereof) above 600 tons inwards, and thirty cents outwards.

Outward pilotage for all vessels of 200 tons and upwards to be compulsory.

Canadian registered vessels of 120 tons and under, free.

The rates for moving vessels in the harbour of Halifax by a pilot licensed for the Halifax Pilotage District when a pilot is employed for the purpose shall be as follows:—

All vessels under 2,000 tons	\$ 5 00
All vessels over 2,000 tons	10 00

To Bedford Basin and Lawlor’s Island—

All vessels under 1,000 tons	\$10 00
All vessels over 1,000 tons	20 00

Vessels stopping at Quarantine are not subject to charge for moving unless the detention exceeds 12 hours.

SESSIONAL PAPER No. 21

REPORT OF THE PILOTAGE COMMISSIONERS OF THE PILOTAGE DISTRICT HARVEY AND ALMA, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

Commissioners.	When Appointed.
M. C. Anderson.....	O.C., June 29, 1901.
Rainsford Butland.....	O.C., March 16, 1912.
Ira Copp.....	O.C., March 16, 1912.

Names of Pilots.	When appointed.	Age.	Earnings.
			\$ cts.
Chas. McKinley.....	1911	68	37 50
Leonard Martin.....	1911	50	37 50
David Alexander.....	1912	56	115 92
Medford Dixon.....	1912	31	115 92
Arthur Edgett.....	1911	37	183 22
			490 06

No apprentices in this district.
No white flag ships licensed this year.

VESSELS WHICH PAID FEES FOR THE YEAR.

Number.	Tonnage.	Amount paid.
3 British steam vessels.....	54,000	
6 Foreign " ".....	111,000	
1 " sail ".....	900	

PILOTAGE BOATS.

Bertha.
Silver Spray.
Marie.

Navigation opened March 5, 1912, and closed December 31, 1912.

M. C. ANDERSON,
Secretary.

January 1, 1913.

The rates of pilotage dues for the time being in force in this district, including the amounts and description of all charges upon shipping made in respect of pilotage:—

- Port of Harvey inwards, one cent for registered ton.
- Port of Harvey outwards, one and one-half cents per registered ton.
- Port of Alma inwards, one and one-half cents per registered ton.
- Port of Alma outwards, one and three-quarter cents per registered ton.

4 GEORGE V., A. 1914

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
LOUISBURG, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.
PILOTAGE COMMISSIONERS.

Names.	When appointed.
Thomas Townsend.....	O. C. Sept. 10, 1898...
W. W. Lewis.....	O. C. Sept. 10, 1898...
Michael Pope.....	O. C. Feb. 25, 1907...
John Dixon.....	O. C. Sept. 26, 1908...
Daniel Townsend.....	O. C. May 28, 1911...

NAMES OF PILOTS, AGE AND EARNINGS.

Names.	When appointed.	Age.	Earnings.
Pierce Pope.....	May 7, 1910.....	38	\$673 05
John Power.....	May 7, 1910.....	50	673 05
Wm. Williams.....	May 7, 1910.....	42	673 05
John Kelly.....	Mar. 1, 1911.....	50	673 05
Thos. Wilcox.....	May 7, 1911.....	48	673 05
W. H. Townsend.....	May 7, 1911.....	66	673 05
Lewis Tutty.....	May 7, 1911.....	42	673 05
John E. Tutty.....	May 7, 1911.....	52	673 05
			\$ 5,384 40

No apprentice pilots in this authority.
No white flag ships licensed during year.

VESSELS WHICH PAID PILOTAGE FEES FOR THE YEAR.

No.		Tonnage.	Amount paid.
100	British steam vessels.....	192,289	\$ 3,902 96
12	British sailing vessels.....	1,592	52 80
43	Foreign steam vessels.....	104,591	1,871 80
1	Foreign sailing vessels.....	300	7 00
156			\$ 5,834 56

RECEIPTS AND EXPENDITURES.

Receipts.		Expenditures.	
From British steamships.....	\$ 3,900 90	Commission and stationery.....	\$ 237 68
From British sail ships.....	56 80	Other bills to maintain service.....	756 72
From foreign steamships.....	1,870 10	Paid pilots each \$673.05.....	5,384 40
From foreign sail ships.....	7 00		
Taking orders to ships.....	120 00		
Docking ships.....	108 00		
Shifting ships.....	16 00		
Coast piloting.....	300 00		
	\$ 6,378 80		\$ 6,378 80

8 pilotage boats ready for use.
Navigation open year round.

December 31, 1912.

THOMAS TOWNSEND,
Secretary.

SESSIONAL PAPER No. 21

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in the respect of pilotage:—

	Inward.	Outward.
On sail and steamship of 80 tons to 120	\$ 4 00	\$ 3 00
" " 120 " 200	6 00	4 00
" " 200 " 300	7 00	5 00
" " 300 " 400	8 00	6 00
" " 400 " 500	10 00	8 00
" " 500 " 700	11 00	9 00
" " 700 " 1,000	13 00	11 00
" " 1,000 " 1,500	15 00	12 00
" " 1,500 " 2,000	16 00	14 00
" " 2,000 " 2,500	18 00	16 00
" " 2,500 " 3,000	22 00	18 00

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
MIRAMICHI, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

Pilotage Commissioners.	When appointed.
John C. Miller	O. C. Apr. 12, 1893.
Wm. Snowball	O. C. Apr. 12, 1893.
Ernest Hutchison	O. C. Apr. 12, 1893.
Hon. Allan Ritchie	O. C. Apr. 12, 1893.
Byron N. Call, Secretary	O. C. Jan. 13, 1904.

Names of pilots.	When appointed.	Age.	Earnings.
			\$ cts.
Louis Jimmo	May 29, 1875	58	763 19
Francis Martin	Jan. 12, 1866	78	763 19
Maxime Martin	July 10, 1869	67	763 19
Alex. Wilson	July 10, 1871	66	763 19
Robt. J. Walls	Jan. 12, 1870	61	763 19
Wm. Walls, sr.	Apr. 20, 1875	58	763 19
Jas. Nowlen	Apr. 28, 1877	61	763 19
Geo. Sutton	Apr. 28, 1878	61	763 19
James A. Nowlen	Apr. 28, 1878	57	763 19
Jos. Jimmo	Apr. 28, 1879	57	693 19
Jas. McCallum	Apr. 28, 1880	68	763 19
John Martin	Apr. 28, 1880	53	763 19
Aza Walls	June 23, 1880	53	763 19
Wm. Walls, jr.	May 20, 1882	55	763 18
John Nowlen	June 21, 1873	56	763 18
Michael J. Jimmo	Nov. 1, 1899	45	760 12
George N. Nolan	Nov. 2, 1899	56	760 12
George Savoy	Mar. 10, 1871	68	752 12
			13,650 19

No apprentices in this district
No white flag ships licensed this year.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in respect of pilotage:—

When inward bound, \$2.25 per foot, and in addition to the above for all vessels propelled wholly or in part by steam, 2 cents per registered ton.

When outward bound, \$2 per foot, and in addition to the above for all vessels propelled wholly or in part by steam, 2 cents per registered ton.

For the removal and mooring of vessels of over 300 tons, \$4, and where the distance of removal exceeds four miles, 50 per cent additional on the above rate.

Removal within a distance of one mile is not compulsory, but when pilots are requested to perform this service the charge is \$4.

Steam tug boats towing one or more barges with cargo, inward, may depart outward after having paid full pilotage for the tug and barges inward, without paying any outward pilotage, except on the tug.

Compulsory pilotage on all vessels over 119 registered tons.

VESSELS WHICH PAID PILOTAGE FEES FOR YEAR.

No.		Tonnage.	Amount Paid.
			\$ cts.
38	British steam vessels	66,141	5,127 76
24	British sailing vessels	5,733	1,106 75
42	Foreign steam vessels	76,242	5,994 52
23	Foreign sailing vessels	16,734	1,321 16
127		164,850	13,550 19

RECEIPTS AND EXPENDITURES.

RECEIPTS.	\$ cts.	EXPENDITURES.	\$ cts.
Inward pilotage.....	6,121 94	Printing bill head forms.....	3 50
Outward	7,138 25	Sundries, pilots' office.....	7 72
Removals.	290 00	Late Pilot Tait's share schooners.....	127 58
R. J. Walls, payment as pilot master ..	100 00	Refund motor vessel "Neophyte"....	10 98
	13,650 19	Rent pilots' office, one year.....	24 00
		Rent warehouse for stores	10 00
		Fares, Mir. Steam Nav. Co.....	7 50
		Expenses, Pilot Jimmo from Canso ...	6 00
		Horse-hire, pilots to and from vessels.	8 95
		Salt for fishing	1 50
		Wages and provisions Schr. "Princess Louise"	436 76
		Wages and provisions Schr. "Senator Snowball"	405 19
		Sails, fitting out and supplies Schr. "Princess Louise"	275 66
		Sails, fitting out and supplies Schr. "Senator Snowball"	277 86
		Secretary Treasurer, postage, stationery, telephone tolls.....	3 70
		Secretary Treasurer, commission on \$13,650.19 at 3 per cent	409 50
		Paid 15 pilots \$9,440.51, and 3 pilots \$2,193.28.....	11,633 79
	13,650 19		13,650 19

Pilotage Boats.	Cost of Maintenance.	
		\$ cts.
" Princess Louise ".....	Wages, provisions, fitting out and supplies	712 42
" Senator Snowball "	" " "	683 05
" Mabel ".....	Paid by 3 pilots independent of club.....	

BYRON N. CALL,
Secretary.

December 31, 1913.

PILOTAGE COMMISSIONERS.

Name.	When Appointed.	Changes.
Captain Stephen Smith.....	O. C. April 9, 1907.....	Captain T. A. Masters died.
W. R. Potter.....	O. C. April 9, 1907.....	
Brenton Borden.....	O. C. April 9, 1907.....	
Captain R. Lawrence.....	O. C. February 26, 1910.....	
Captain William McCullough.....	O. C. April 24, 1912.....	

No apprentice pilots in this authority.
No white flag ships licenses for the year.
No vessels paid pilotage during the year.
No pilotage boats in this district.
Navigation opened April 1 and still open at this date.

BRENTON BORDEN,
Secretary.

December 31, 1912.

The rates of pilotage dues from the time being in force in this district including the amounts and description of all charges upon shipping made in the respect of pilotage:—

	Inward.	Outward.
	Free.	Free.
Canadian vessels of 120 tons and under.....		
From the pilot boat anchored in the Basin of Minas to Walton and anywhere between Walton and Tenecape, to Cheverie, to Summerville, to Avondale, to Miller's Creek, to Wentworth, to Windsor, to Hantsport, to Avonport, to Horton Landing, to Wolfville, to Port Williams, to Picket Wharf, to Canning, to anchorage below or above Horton Bluff Light, on vessels under sail, barges in tow or steamers—		
On vesssls over 120 tons and under 200 tons.....	\$ 9 60	\$ 6 00
" 200 " 300.....	13 20	8 40
" 300 " 400.....	16 80	10 80
" 400 " 500.....	19 20	12 00
" 500 " 600.....	21 60	13 20

Over 600 tons, inwards, an additional three cents for every ton over 600 tons; outwards, an additional two cents for every ton over 600 tons.

4 GEORGE V., A. 1914

From the pilot boat anchored in Minas Basin to Pereaux, to
Kingsport and Mill Creek—

	Inward.	Outward.
On vessels of 120 tons and under	Free.	Free.
On vessels under sail, barges in tow or steamers—		
Over 120 tons and under 200 tons.....	\$ 8 00	\$ 5 00
" 200 " 300	11 00	7 00
" 300 " 400	14 00	9 00
" 400 " 500	16 00	10 00
" 500 " 600	18 00	11 00
Over 600 tons, inward, an additional two cents for every ton above 600 tons; outwards, an additional two cents for every ton above 600 tons.		

REPORT OF MONTREAL PILOTAGE FOR THE YEAR ENDING DECEMBER 31, 1912.

MONTREAL, January 10, 1913.

ALEXANDER JOHNSTON, Esq.,
Deputy Minister,
Marine and Fisheries Department,
Ottawa, Ont.

SIR,—I have the honour to report on the working of the Montreal Pilotage for the year 1912.

The offices in Montreal are situated on the water front, at No. 223 Commissioner street; Captain James J. Riley is the superintendent; Mr. J. Omer Michaud is the assistant; Mr. Louis Pinoteau is the messenger, and Mr. Roch Vallières is the night guardian, Mr. C. Lafrenière was guardian on the Sundays that the canal was open.

The offices in Montreal are open during the whole of the year, but the night guardian is only employed and paid for the season of navigation.

The offices in Quebec are on Dalhousie street, opposite the office of the Quebec Pilots and the Boatman's landing.

Mr. Ulric Thibaudeau had charge of the Quebec office and was assisted by Mr. Prudent Beaudet who acts as night guardian.

The Quebec office is only open during the season of navigation; the night guardian goes off duty and pay at the close of navigation.

At the close of last year, the number of pilots on the active service list was (50) fifty and that number has been kept during the present year.

Appendix No. 1 shows the names of the branch pilots, their age, place of residence, date of branch, remarks, number of trips to and from Montreal, number of trips to and from intermediate ports, total number of trips, earnings to Montreal, earnings to intermediate ports, total earnings, how employed, whether on special service or on tour-de-role.

The total amount shown as earned by the branch pilots during this year was \$88,292.05, but this does not include the amount of money earned by the pilots for moving vessels in the harbour.

The largest amount earned during the season 1912, by any one branch pilot, was \$2,446.28, and the smallest was \$765.46, exclusive of money earned by moving vessels in the harbour.

The number of branch pilots assigned to special service was 37. The number of men on tour-de-role was (13) thirteen.

The amount earned by the (37) thirty-seven special service men was \$74,201.95, and by the (13) thirteen tour-de-role men \$14,090.10, an average of \$2,005.45, for each special service pilot, and \$1,083.85 for each tour-de-role pilot, exclusive of money earned by moving vessels in the harbour; but including the money earned by the tour-de-role men for movages, their average is \$1,258.46.

SESSIONAL PAPER No. 21

No account is taken of the money earned by the special service pilots for movages, but it may be said to be \$100 each.

Appendix No. 2 shows the earnings of the tour-de-role pilots for the years 1911 and 1912.

The behaviour of the pilots has been generally good.

Appendix No. 3 shows the names of the selected apprentices and a summary of the work done by them.

Appendix No. 4 shows full list of apprentice pilots, with their ages, place of residence and date of license, the names with a red star before them are those of the seven selected apprentices.

The behaviour of these young men has been generally good.

Appendix No. 5 shows the names of the persons who are receiving pensions from the Pilots Superannuation Fund, and the amount received by each every three months.

The Pilots Superannuation Fund is in the custody and under the control of the Finance Department in Ottawa.

This office remits to the Finance Department all moneys received for account of the fund and sends receipts for all moneys received from the fund.

Appendix No. 6 shows the number and sort of vessels reported to this office during the years 1911 and 1912, also gives tonnage, total number of crews and the number of inward passengers.

Appendix No. 7 shows the changes that have taken place in the list of pilots from the time that the department took over the governance of the pilotage up to the present time.

Appendix No. 8 shows the tariff rates for pilotage in this district.

The annual general meeting of the Montreal Pilots Association, was held at Deschambault and the following officers were elected for the year 1913.

WILBROD GAUTHIER, *President.*

HENRI BOUILLE, *Secretary.*

ALBERIC ANGERS,

TANCREDE PERRON,

NAPOLEON LACHANCE,

Members of Committee.

All respectfully submitted.

Your obedient servant,

JAMES J. RILEY,

Superintendent of Pilots.

APPENDIX

BRANCH PILOTS FOR AND ABOVE

STATEMENT showing the number of Branch Pilots for and above the Harbour of Quebec whether Employed on Special

No.	Name of Pilot.	Age.	Residence.	Date of Branch.	Remarks.
1	Auger S. Cléophas.....	67	Pointe Levis, P.Q.....	Sept. 22, 1874.	
2	Labranche, Ferdinand...	65	Portneuf, P.Q.....	April 8, 1875.	
3	Bouillé, Louis Z.	63	Deschambault, P.Q.	Jan. 16, 1878.	
4	Gauthier, Laurent.....	62	"	Dec. 10, 1879.	
5	Nault, Delavoie	59	"	" 10, 1879.	
6	Gauthier, Wilbrod.....	60	"	" 10, 1879.	
7	Arcand, Norbert.....	60	Champlain, P.Q.....	" 10, 1880.	
8	Bouillé, Tancrede	59	Deschambault, P.Q.	" 11, 1880.	
9	Raymond, Wilfrid.	58	"	April 20, 1888.	
10	Hurteau, Joseph P.....	52	164 Parc Lafontaine Street, Montreal, P.Q.	Mar. 20, 1889.	President of Committee .
11	Perreault, Edouard.....	63	Deschambault, P.Q.	" 20, 1889.	
12	Dussault, Honoré.....	59	Ste. Petronille, P.Q.	July 16, 1889.	
13	Brière, Arthur	56	Portneuf, P.Q.....	April 28, 1891.	
14	Perreault, Alexis	50	553 Marie Anne Street, Mont- real, P.Q.	" 28, 1891.	
15	Dufresne, Côme.	52	Deschambault, P.Q.	June 28, 1891.	
16	Naud, Aubert	59	"	July 11, 1893.	
17	Dussault, Napoléon .. .	52	"	April 3, 1894.	
18	Arcand, Barthelemi ...	52	"	" 3, 1894.	Member of Committee ..
19	Belisle, Prudent.....	50	709 St. Antoine Street, Mont- real, P.Q.	" 3, 1894.	
20	Arcand, Georges	48	Deschambault, P.Q.	" 3, 1894.	
21	Toupin, Constant.....	46	Three Rivers, P.Q.....	" 3, 1894.	
22	Perreault, Georges.....	47	1521 Bordeaux Street, Mont- real, P.Q.	Sept. 11, 1894.	
23	Bouillé, Narcisse	53	Deschambault, P.Q.	Oct. 9, 1884.	
24	Léveillé, Joseph.....	49	Batiscan, P.Q.....	June 18, 1895.	
25	Perron, Severe	55	115 Christopher Columbus Avenue, Montreal, P.Q.	April 14, 1896.	
26	Angers, Alberic	38	Ste. Anne de la Perade, P.Q.	Mar. 14, 1898.	Secretary of Committee .
27	Belisle, Arthur	50	Deschambault, P.Q.	Sept. 20, 1898.	
28	Hamelin, G. Théodule ...	39	Grondines, P.Q.	" 20, 1898.	
29	Perreault, Amthyme	44	Deschambault, P.Q.	May 1, 1900.	
30	Raymond, J. N.	43	"	Oct. 4, 1900.	
31	Bourassa, J. Henri	35	Levis, P.Q.....	April 16, 1901.	
32	Paquin, E. Azarias.....	40	18 du Pont Street, Quebec, P.Q.	June 13, 1902.	
33	Labranche, J. Melville...	38	Portneuf, P.Q.....	" 13, 1902.	
34	Paquet, Damien.....	39	Grondines, P.Q.	Feb. 4, 1903.	
35	Gariépy, J. Arthur	34	Bienville, Levis, P.Q.....	April 20, 1903.	
36	Gagnon, Albert.....	38	Three Rivers, P.Q.....	Nov. 30, 1903.	
37	Frenette, J. Oswald	37	Portneuf, P.Q.....	Mar. 26, 1906.	
38	Hamelin, Chas. B.	33	Champlain, P.Q.....	June 8, 1906.	
39	Perron, Tancrede	35	38 Orleans Street, Maison- neuve, Montreal, P.Q.	Dec. 1, 1906.	Member of Committee ..
40	Frenette, J. Delavoie....	35	Portneuf, P.Q.....	April 1, 1907.	
41	Hamelin, Fortunat ...	35	St. Romuald or New Liver- pool, P.Q.	" 20, 1907.	
42	Gauthier, J. Cyriac.....	33	2160 St. Denis Street, Mont- real, P.Q.	July 3, 1907.	Member of Committee ..

SESSIONAL PAPER No. 21

No. 1.

THE HARBOUR OF QUEBEC.

during the year 1912—their Age, Residence, Number of Pilotages, Earnings, and Service or Tour-de-Role.

Number of trips to Montreal.		Number of trips to Intermediate Ports.		Total No. of Trips.	Earnings to Montreal.	Earnings to Intermediate Ports.	Total Earnings.	Employed on Special Service or Tour-de-Role.
In.	Out	In.	Out		\$ cts.	\$ cts.	\$ cts.	
15	14	....	...	29	1,693 27	.....	1,693 27	Donaldson, Thomson, Cairn and Cunard Lines.
19	6	1	...	26	902 87	20 13	923 00	Tour-de-Role.
17	18	....	...	35	2,120 96	.....	2,120 96	C.P.R. Atlantic.
18	18	...	....	36	2,318 13	.....	2,318 13	Allan Line.
24	24	...	....	48	2,446 28	.....	2,446 28	Dominion Coal Co.
21	14	....	....	35	2,257 29	.....	2,257 29	Allan Line.
23	23	1	1	48	2,380 08	61 11	2,441 19	Dominion Coal Co.
14	21	....	...	35	2,190 34	.....	2,190 34	Allan Line.
15	15	....	....	30	1,775 92	.....	1,775 92	Donaldson, Thomson, Cairn and Cunard Lines.
22	22	2	3	49	2,161 88	176 38	2,338 26	Dominion Coal Co.
20	20	...	....	40	2,201 31	.....	2,201 31	Manchester or Furness Withy Lines.
17	3	3	....	23	802 62	61 25	863 87	Tour-de-Role.
16	19	1	...	36	1,910 19	35 44	1,945 63	Head, Maclay and McIntyre Lines.
13	14	....	....	27	1,635 68	.....	1,635 68	Canadian Northern S.S. Limited.
18	17	....	...	35	2,170 99	.....	2,170 99	White Star Dominion, Leyland and Canada Lines.
17	16	....	....	33	1,881 79	.....	1,881 79	Allan Line.
15	14	....	....	29	1,679 28	.....	1,679 28	Donaldson, Thomson, Cairn and Cunard Lines.
13	18	2	1	34	931 07	88 38	1,019 45	Tour-de-Role.
20	20	5	4	49	2,002 55	314 12	2,316 67	Dominion Coal Co.
15	15	....	...	30	1,230 73	.....	1,230 73	Quebec S.S. Co.
14	12	1	1	28	875 61	60 08	935 69	Tour-de-Role.
15	20	....	...	35	2,199 51	.....	2,199 51	White Star Dominion, Leyland and Canada Lines.
19	22	...	....	41	2,281 16	.....	2,281 16	Manchester or Furness Withy Lines.
14	16	....	...	30	1,787 86	.....	1,787 86	Donaldson, Thomson, Cairn and Cunard Lines.
21	22	3	4	50	2,080 49	209 75	2,290 24	Dominion Coal Co.
20	16	....	....	36	2,283 48	.....	2,283 48	White Star Dominion, Leyland and Canada Lines.
17	16	...	1	34	915 17	28 43	943 60	Tour-de-Role.
21	23	3	2	49	2,184 33	194 93	2,379 26	Dominion Coal Co.
6	37	....	....	43	1,263 53	.....	1,263 53	Tour-de-Role.
11	27	1	1	40	1,266 34	70 44	1,336 78	"
22	22	2	2	48	2,230 48	122 19	2,352 67	Dominion Coal Co.
12	11	12	9	44	1,125 01	635 72	1,760 73	Nova Scotia Steel and Coal Co.
18	18	....	....	36	2,034 98	.....	2,034 68	White Star Dominion, Leyland and Canada Lines.
16	13	....	1	30	1,018 57	19 25	1,037 82	Tour-de-Role.
23	23	...	....	46	2,300 10	.....	2,300 10	Dominion Coal Co.
19	11	1	3	34	1,142 84	81 33	1,224 22	Tour-de-Role.
23	23	1	1	48	2,280 02	65 19	2,345 21	Dominion Coal Co.
18	22	1	...	41	1,781 57	35 88	1,817 45	Elder, Dempster & Co.
15	15	....	....	30	1,805 36	.....	1,805 36	Donaldson, Thomson, Cairn and Cunard Lines.
17	16	....	1	34	1,949 93	49 88	1,999 81	C.P.R. Atlantic.
17	17	....	....	33	1,861 64	.....	1,861 64	Allan Line.
17	19	....	....	36	2,191 98	.....	2,191 98	C.P.R. Atlantic.

4 GEORGE V., A. 1914

BRANCH PILOTS FOR AND ABOVE

No.	Name of Pilot.	Age.	Residence.	Date of Branch.	Remarks.
43	Angers, J. B.	32	Ste. Anne de la Perade, P.Q.	July 7, 1908.	.....
44	Perreault, David J.	33	" " "	Jan. 15, 1909.	.....
45	Lachance, Napoléon	29	26 Conroy Street, " Quebec, P.Q.	June 4, 1909.	.....
46	Bouillé, Henri.....	28	Deschambault, P.Q.	" 30, 1909.	.....
47	Perron, Théode.....	31	Sorel, P.Q.....	Aug. 1, 1909.	.....
48	Dussault, Bona.....	31	St. Marc des Carrieres, P.Q.	May 2, 1910.	.....
49	Arcand, J. Arthur.....	30	Champlain, P.Q.....	Aug. 2, 1910.	.....
50	Rivard, F. X.....	32	Grondines, P.Q.....	April 10, 1911.	.....

MONTREAL PILOTAGE OFFICE,
Montreal, December 31, 1912.

SESSIONAL PAPER No. 21

THE HARBOUR OF QUEBEC—*Concluded.*

Number of trips to Montreal.		Number of trips to Intermediate Ports.		Total No. of Trips.	Earnings to Montreal.	Earnings to Intermediate Ports.	Total Earnings.	Employed on Special Service or Tour-de-Role.
In.	Out	In.	Out		\$ cts.	\$ cts.	\$ cts.	
15	18	1	3	37	1,219 85	99 75	1,319 60	Tour-de-Role.
27	24	...	....	51	1,788 77	.....	1,788 77	Montreal Transportation Co.
19	12	2	....	33	1,068 57	53 91	1,122 48	Tour-de-Role.
6	7	....	....	13	765 46	.....	765 46	The New Zealand Shipping Co.
9	13	3	5	30	890 04	260 89	1,150 93	Direct and Crown Line, then Tour-de-Role.
16	20	....	1	37	1,147 31	21 00	1,168 31	Tour-de-Role.
21	20	2	5	48	1,950 90	210 73	2,161 63	Dominion Coal Co.
19	10	....	1	30	902 00	29 75	931 75	Tour-de-Role.
					85,286 09	3,005 96	88,292 05	

JAMES J. RILEY,
Superintendent of Pilots.

APPENDIX No. 2.

MONTREAL PILOTAGE OFFICE.

EARNINGS for each Tour-de-Role Pilot for the years 1911 and 1912.

Name of pilot.	Total Earnings in 1911.	Pilotage Earnings in 1912.	Add for Movings in 1912. Approx- imately.	Total Earnings in 1912.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Labranche, Ferdinand		923 00	80 00	1,003 00
Dussault, Honoré.....	929 90	863 87		863 87
Arcand Berthélemi.....		1,019 45	205 00	1,224 45
Toupin, Constant.....	1,578 13	935 69	150 00	1,085 69
Belisle, Arthur.....	1,062 63	943 60	190 00	1,133 60
Perreault, Anthyme.....	1,159 92	1,263 53	470 00	1,733 53
Raymond, J. H.....	1,557 65	1,336 78	395 00	1,731 78
Paquet, Damien.	1,454 01	1,037 82	130 00	1,167 82
Gagnon, Albert		1,224 22	110 00	1,334 22
Lachance Napoléon.....	1,498 48	1,122 48	105 00	1,227 48
Angers, J. B.....		1,319 60	100 00	1,419 60
Dussault, Bona ...	1,141 83	1,168 31	210 00	1,378 31
Rivard, F. X.....	316 24	931 75	125 00	1,056 75
	10,698 79	14,090 10	2,270 00	16,360 10

JAMES J. RILEY,
Superintendent of Pilots.

APPENDIX No. 3.

MONTREAL PILOTAGE OFFICE.

SELECTED PILOTS FOR AND ABOVE THE HARBOUR OF QUEBEC.

SUMMARY of the work of the Selected Apprentice Pilots for and above the Harbour of Quebec, showing the number of trips made with branch pilots on ocean steamers during the year 1912.

No. 1. Joseph Mayrand.....	Made 50 Trips.
" 2. Jules Brière.....	" 54 "
" 3. Napoleon DeVillers.....	" 55 "
" 4. Achille Gosselin.....	" 52 "
" 5. Armand Marchand.....	" 61 "
" 6. Donat Paquette.....	" 65 "
" 7. Edmond Lacroix.....	" 54 "

JAMES J. RILEY,
Superintendent of Pilots.

MONTREAL, December 31, 1912.

SESSIONAL PAPER No. 21

APPENDIX No. 4.

MONTREAL PILOTAGE OFFICE.

LIST of Apprentice Pilots for and above the Harbour of Quebec, with particulars regarding them, age, residence, and date of license.

No.	Name of Apprentices.	Age.	Residence.	Date of License.
*1	Mayrand, Joseph.....	31	Lachevrotière, Que.....	Aug. 16, 1899.
*2	Brière, Jules	26	Portneuf, Que.....	Dec. 30, 1903.
*3	DeVillers, Napoleon	26	Lotbinière, Que.	" "
*4	Gosselin, Achille.....	27	Deschambault, Que.	" "
*5	Marchand, Armand.....	26	Three Rivers, Que.....	" "
*6	Paquette, Donat.....	28	Grondines, Que.....	" "
*7	Lacroix, Edmond.....	27	Contrecoeur, Que	" "
8	Houde, Thomas.	26	St. Antoine ds Tilly, Que.....	" "
9	Marchand, Cyprien.	26	1563 St. André St., Montreal, Que....	" "
10	Naud, Emilien.....	26	Deschambault, Que.....	" "
11	Perreault, Jos. Origène,.....	26	553 Marie Anne St., Montreal, Que. .	Nov. 1, 1906.
12	Perron, Oscar	25	Deschambault, Que.....	May 15, 1907.
13	De Villers, Joseph Edmond.....	25	St. Louis de Lotbinière, Que.	June 15, 1907.
14	Beaudry, François	22	Ste. Anne de la Péraide, Que	May 5, 1908.
15	Léveillé, Horace.....	21	Batiscan, Que.	May 5, 1908.
16	Gauthier, André.....	20	Deschambault, Que.....	Sept. 17, 1908.
17	De Villers, Arthur.....	22	St. Louis de Lotbinière, Que.....	May 10, 1909.
18	Lavigne, Gaston.....	21	308 Drolet St., Montreal, Que.....	May 12, 1909.
19	De Lachevrotière, C. Auguste	22	Lotbinière, Que.....	Aug. 31, 1909.
20	Hallé, Alphonse.....	19	195 Queen St., Quebec, Que.....	Oct. 14, 1909.

*Selected apprentices.

JAMES J. RILEY,

Superintendent of Pilots.

MONTREAL, December 31, 1912.

APPENDIX No. 5.

LIST OF PENSIONERS OF THE MONTREAL DECAYED PILOTS FUND.

Amount payable each quarter.

No.	Name.	Amount.	Residence.
		\$ cts.	
1	Widow David L. Bouillé.....	29 33	Deschambault, Que.
2	" Athanase Dufresne.....	37 33	" "
3	" Alexis Gauthier.....	32 00	" "
4	" Octave J. Hamelin.....	37 33	" "
5	" Adolphe Lisé.....	37 33	369 St. Catherine St. E., Montreal.
6	" David Mathieu.....	32 00	77 Fabre St., Montreal.
7	" Edouard Naud.....	32 00	189 Joliette St., Hochelaga, Que.
8	" Jean Nault.....	32 00	Deschambault, Que.
9	" Elzéar Bellisle.....	37 33	" "
10	" Zéphirin Bouillé.....	37 33	" "
11	" Cyrille, Bélisle.....	29 33	40 Third Ave., Viauville, Montreal.
12	" Joseph Pleau.....	37 33	Batiscan, Que.
13	" Nestor Arcand.....	37 33	270 Boyer St., Montreal.
14	" Alfred Frenette.....	37 33	Portneuf, Que.
15	" C. Lydéric Bouillé.....	32 00	Three Rivers, Que.
16	" G. Jos. Dussault.....	37 33	Deschambault, Que.
17	" Célestin Brunet.....	37 33	1 Rouville St., Montreal.
18	" L. A. Bouillé.....	37 33	Deschambault, Que.
19	Heirs Josephat Sauvageau..... c/o Gustave Picard, tutor.	29 33	" "
20	Dd. Pilot Jean Arcand.....	75 00	" "
21	" Philippe Bélanger.....	75 00	Lotbinière, Que.
22	" Joseph Chandonnet.....	75 00	Lévis, Que.
23	" Louis Mayrand.....	75 00	Ste. Anne de la Pérade, Que.
24	" Augustin Naud.....	75 00	St. Marc des Carrières, Que.
25	" Liboire Perreault.....	75 00	" "
26	" Gédéon Groleau.....	75 00	Grondines, Que.
27	" Alfred St. Amant.....	75 00	Deschambault, Que.
28	" Néré Bellisle.....	75 00	" "
29	" Narcisse Perreault.....	75 00	" "
30	" Ulric Groleau.....	75 00	Grondines, Que.
31	" Prudent Beaudet.....	75 00	261 John St., Que.
32	" Georges Dufresne.....	75 00	Deschambault, Que.
33	" Onésime Naud.....	75 00	" "

JAMES J. RILEY,
Superintendent of Pilots.

MONTREAL, December 31, 1912.

SESSIONAL PAPER No. 21

APPENDIX No. 6.

MONTREAL PILOTAGE OFFICE.

STATEMENT showing the number and sort of vessels reported in this office, total tonnage, total of crews, and number of passengers inward for seasons 1911 and 1912.

	1911.	1912.
Sea going vessels.....	724	711
Lake steamers.....	237	316
Schooners ...	35	38
Barges, tugs, and steam yachts.....	21	34
	1,017	1,099
Total tonnage of these vessels.....	2,621,484	2,800,070
The number of the masters and crews was...	65,339	70,882
Number of passengers inward.....	89,682	128,727

There were also 142 lake steamers that came into the still waters of the harbour without reporting at this office, aggregating 145,235 tons and navigated by 2,510 persons.

JAMES J. RILEY,

Superintendent of Pilots.

MONTREAL, December 31, 1912.

SESSIONAL PAPER No. 21

MONTREAL PILOTAGE OFFICE.

By-law 44 of the By-laws of the Montreal Pilotage District.

By-law 44.—From and after the coming into force of the present by-laws, the following fees shall be payable for pilotage between the harbours of Montreal and Québec and between the several places therein mentioned.

Harbours of Montreal and Quebec and between the several places therein mentioned:

From the Harbour of Quebec to Portneuf and the opposite side of the River St. Lawrence, or below Portneuf and above the Harbour of Quebec:

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned) for each foot of draught of water:

Upwards..	\$0 50
Downwards..	0 50

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:

Upwards	\$0 62½
Downwards..	0 62½

For the pilotage of any vessel under sail, for each foot of draught of water:

Upwards..	\$1 05
Downwards..	0 70

From the Harbour of Quebec to Three Rivers and the opposite side of the River St. Lawrence or any place above Portneuf and below Three Rivers:

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:

Upwards..	\$1 50
Downwards..	1 50

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:

Upwards..	\$1 75
Downwards..	1 75

For the pilotage of any vessel under sail, for each foot of draught water:

Upwards..	\$2 60
Downwards..	1 90

From the Harbour of Quebec to Sorel and the opposite side of the River St. Lawrence, or any place above Three Rivers and below Sorel.

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:

Upwards..	\$1 50
Downwards..	1 50

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:

Upwards..	\$1 87½
Downwards..	1 87½

For the pilotage of any vessel under sail, for each foot of draught of water:

Upwards..	\$3 15
Downwards..	2 10

SESSIONAL PAPER No. 21

Number.	Vessels which paid pilotage fees for the year.	Tonnage.	Amount paid.
286	British steam vessels.....	432,167	\$17,096 26
137	Foreign ".....	183,047	8,820 42
1	" sail vessels.....	560	21 70
4	" barges.....	4,377	84 69
428			

RECEIPTS.

British steamers.....	\$17,096 26
Foreign ".....	8,820 42
" sail.....	21 70
" barges.....	84 69

EXPENDITURES.

Victoria pilot station expenses—	
Boatman's wages....	\$ 1,080 00
Supplies.....	313 61
Telephone and telegrams....	318 55
Mileage books.....	432 20
Miscellaneous expenses... ..	237 84
	<u>\$ 2,382 20</u>
Nanaimo pilot station expenses—	
Boat and buggy hire.....	689 00
Telephone and telegrams....	128 14
Hotel account.....	60 75
	<u>877 89</u>
Pilot travelling and personal expenses	4,110 00
Commission to collectors.....	252 20
Exchange on drafts.....	5 80
	<u>4,368 00</u>
Pilot office expense account—	
Salary.....	440 00
Rent.....	220 00
Light, fuel and telephone. . .	59 11
Printing, postage and stationery.....	63 80
Miscellaneous expenses ...	76 80
Cash on hand.....	378 70
	<u>1,238 41</u>
Amount paid to pilots.....	17,156 57
	<u>\$26,023 07</u>

PILOTAGE BOATS.		
Number or name—	Statement of cost of maintenance—	
Harry Austin.....	Wages.....	\$1,080 00
	Gasoline, repairs and other supplies....	1,313 61
		<hr/>
		\$1,393 61

The rates of pilotage for the time being in force in this district including the amounts and description of all charges made in the respect of pilotage:—

Regular pilotage rates are one (1) cent per registered ton, and one dollar (\$1) per foot draught.

Tow boats, fishing boats and small trading vessels are charged a flat rate of from ten dollars (\$10) to twenty dollars (\$20), according to size.

Barges carrying two thousand tons and over are charged twenty dollars (\$20) under two thousand tons, and over one thousand (1,000) tons, fifteen dollars (\$15): under one thousand (1,000) tons, ten dollars (\$10).

Navigation is always open.

JAMES CROSSAN,
Secretary.

February 19, 1913.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
NEW WESTMINSTER, B.C., FOR THE YEAR ENDING DECEMBER
31, 1912.

Commissioners.	When appointed.
James C. Armstrong	O. Feb. 6, 1904.
James B. Kennedy.....	March 28, 1904.
Joseph Mayers.....	Oct. 18, 1909.

Name of Pilot.	Age.	When appointed.
Frank S. Carter	34	July 11, 1911.

No apprentices for this district.
No white flag ships licensed during the year.

Vessels which paid pilotage fees for year.	Tonnage.	Amount paid.
British steam vessels	5,695	\$ 197 35
" sailing "	1,343	57 35
Foreign steam "	729	124 40
" sailing "	5,075	192 51
	12,842	\$ 571 61

The only pilot of this authority is paid by the Corporation of the City of New Westminster, at the rate of \$150 per month, and all fees collected for pilotage are turned over by the Pilotage Authority to the city, except 10 per cent of same, to defray the expenses of pilot and office.

Navigation always opened.

The rates for pilotage dues for the time being in force this district including the amounts and description of all charges upon shipping made in respect of pilotage:—

\$1 for foot draught, 1 cent per ton registered tonnage (net).

D. H. MacGORRAN,
Secretary.

January 7, 1913.

SESSIONAL PAPER No. 21

REPORT OF THE PILOTAGE COMMISSIONERS OF THE PILOTAGE DISTRICT OF PARRSBORO, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.

Pilotage Commissioners.	Appointed.
A. McGillivary.....	O. C. Nov. 3, 1885.
Stephen R. DeWolfe	O. C. Jan. 24, 1881.
Edward Gillespie.....	O. C. Feb. 26, 1889.
James E. Pettie.....	O. C. Jan. 24, 1881.
Sydney Smith.....	O. C. Dec. 9, 1886.

Name of Pilot.	Age.	When appointed.	Earnings.
Joseph Henderson.	39	July 13, 1906	\$401 87

No apprentice pilots in this authority.
No white flag ships are licensed in this district.

Vessels which paid pilotage fees during the year.	Tonnage.	Amount.
6 British steam vessels.	11,880	\$ 346 87
1 Foreign steam vessel.....	827	55 00

RECEIPTS.	EXPENDITURE.
Pilotage fees. \$401 87	Paid to Pilot Henderson..... \$373 74
	Paid secretary for salary and contingencies..... 28 13
<u>\$401 87</u>	<u>\$401 87</u>

This pilotage authority does not own any boats.
Navigation opened April 25 and closed November 30, 1912.

PILOTAGE NON-COMPULSORY.

Inward pilotage rates, \$1.25 to \$2.50 per foot draught for sailing vessels and 50 cents per foot draught additional for steamers.

Outward pilotage rates, \$1.50 to \$2.50 per foot draught for sailing vessels and 50 cents per draft foot additional for steamers.

E. GILLESPIE,

Secretary.

December 31, 1912.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
PICTOU, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	Appointed.
Hector McKenzie.....	O.C. October 19, 1912.
John R. Davis.....	O.C. October 19, 1912.
G. Adam Pringle.....	O.C. October 19, 1912.
Adam G. Carson.....	O.C. October 19, 1912.
William McKenzie.....	O.C. October 19, 1912.

NAMES OF PILOTS AND EARNINGS.

Names.	Age.	Appointed.	Earnings.
Chas. Cook.....	65	1874	\$ 130 33
Angus Smith.....	56	1889	554 70
Willard Fraser.....	34	1903	101 80
William McPherson.....	38	1903	134 27
McGregor Fraser.....	45	1899	88 35
			\$1,009 45

No apprentice pilots in this authority.
White flag ships licensed for the year, SS. Cascapedia, \$40.

VESSELS WHICH PAID PILOTAGE FEES FOR THE YEAR.

	Tonnage.	Amount paid.
British steam vessels.....	42,438	\$ 777 42
British sailing vessels.....	592	31 00
Foreign steam vessels.....	6,672	233 52
		\$1,041 94

RECEIPTS AND EXPENDITURES.

RECEIPTS.	EXPENDITURES.
British steamers..... \$ 777 42	Paid pilots..... \$ 1,009 45
Foreign steamers..... 233 52	Secretary's salary..... 200 00
British sailing ships..... 31 00	Balance due Secretary..... 726 76
Five pilot bonds..... 5 00	
Capt. Lachance..... 40 00	
Half pilotage..... 24 50	
Balance due Secretary, 1911..... 824 77	
\$ 1,936 21	\$ 1,936 21

PILOTAGE BOATS AND COST OF MAINTENANCE.

Bertha D—Sail boat, paint, hauling, &c.....	\$ 50 00
Duchess—Gasoline, gasoline oil, hauling, &c.....	100 00
	\$ 150 00

Navigation opened May 1 and closed December, 15, 1912,

January 2, 1913.

DODD DWYER,
Secretary.

SESSIONAL PAPER No. 21

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
PORT MEDWAY, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912

PILOTAGE COMMISSIONERS.

Names.	Appointed.
Edwin Morine.....	O.C. Aug. 8, 1898
J. Fred. Wolfe.....	O.C. April 2, 1910
Chas A. Kennedy....	O.C. Mar. 28, 1912

NAMES OF PILOTS AND EARNINGS.

Names.	Age.	Appointed.	Earnings.
Gilbert Parke.....	50	Feb. 25, 1907	\$ 10 00
James Parke.....	30	Mar. 9, 1909	10 00

No apprentice pilots in this authority.

No white flag ships licensed, for the year.

One foreign steamer vessel of 1,472 tonnage, paid \$20 pilotage during the year.

No special pilot boat used. Ordinary skiff.

Navigation open all year round.

RATES.

Vessels from 120 tons to 300 tons in.	\$ 6.00 out.....	\$ 4.00
" 300 " 400 "	7.00 "	5.00
" 400 " 600 "	9.00 "	6.00
" over 600 " ... "	12.00 "	8.00

F. MORINE,

Secretary.

December 31, 1912.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
PUGWASH, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.

Commissioners.	When appointed.
Elias King.....	O.C. April 29, 1895
Alfred G. King....	O.C. Sept. 20, 1904
William Colbourne.....	O.C. May 29, 1901
Gordon McDonald....	O.C. Apr. 24, 1911
E. A. Murray.....	O.C. Feb. 12, 1908

Names of Pilots.	When appointed.	Age.	Earnings.
Neil McKewon	1890	50	\$ 184 14
Clarence Reid	1891	69	.....
A. E. Seaman	1899	34	199 14
Russel E. Heather (deceased)	1908	31	174 13
Geo. Tuttle King	1903	33	4 25
			\$ 561 66

Vessels which paid pilotage fees for the year	Tonnage.
2 British steamer vessels	3,487
2 Foreign steamer vessels	4,883
5 " sailing "	4,209

RECEIPTS, \$599.46

EXPENDITURES.

Pilots' earnings for 1912	\$561 66	Paid out the amount of all receipts, ...	\$599 46
---------------------------------	----------	--	----------

PILOTAGE BOATS.

Number or name.	Statement of cost of maintenance.
No. 1 Nimrod	Pilots in this port have always maintained all cost and expense themselves, in connection with their pilot boats.
" 2 Venture	
" 3 Ida	
" 4 F. A. Howard	
" 5 Leader	

Navigation opened about April 20, and closed about November 25, 1912.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in respect of pilotage:—

	Inwards.	Outwards.
Vessels 80 and under 140 tons	\$ 6 00	\$ 5 00
" 140 " 230 "	8 00	7 00
" 230 " 300 "	10 00	9 00
" 300 " 400 "	14 00	12 00
" 400 " 500 "	16 00	14 00
" 500 " 600 "	17 00	15 00
" 600 " 700 "	18 00	16 00
" 700 " 800 "	19 00	17 00
" 800 " 900 "	20 00	18 00
" 900 " 1,000 "	21 00	19 00

Vessels over 1,000 tons shall pay 2½ cts. per ton inward ; 2 cts. outward on additional tonnage.
Vessels under 80 tons accepting pilots shall pay 5 cts. per ton inward and 4 cts. per ton outward.
Vessels over 1,000 tons register after entering the harbour and being safely moored by a pilot, employing a pilot to be moved again to a loading berth dock or wharf from her first moorings, shall pay to the pilot so employed the sum of \$5.
Vessels under 1,000 tons and over 300 shall pay \$3.

ELIAS KING,
Secretary.

December 31, 1912.

SESSIONAL PAPER No. 21

REPORT OF THE CORPORATION OF PILOTS FOR AND BELOW THE
HARBOUR OF QUEBEC, FOR THE YEAR ENDING
DECEMBER 31, 1912.

QUEBEC, December 31, 1912.

A. JOHNSTON, Esq.,
Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to transmit to you a detailed statement, in duplicate, of the money received and paid from the pension fund of the Quebec Pilots for the past year; also a detailed statement, in duplicate, of the money received and paid by the corporation of pilots, all audited and certified.

The amount received by the corporation of pilots for pilotage was.	\$140,501 48
Less general expenses, comprising 7 per cent to pension fund.	16,421 48
Leaves net balance.	\$124,080 00
This gave a dividend to each pilot of \$1,680.00.	
977 British vessels gave.	\$138,880 49
17 Foreign vessels gave.	1,620 99
Total. . . 994 vessels.	Total. \$140,501 48

I have the honour to be, sir,
Your obedient servant,
PH. LAMONTAGNE,
Secretary-Treasurer.

RECEIPTS AND EXPENDITURES.

RECEIPTS.		EXPENDITURES.	
Balance, 1911	\$ 1,771 41	Interest paid on loan.	\$ 120 00
Reserve fund.	3,000 00	Amount paid on principal.	1,000 00
Customs of Montreal	5,776 15	Rent.	995 50
" Three Rivers.	922 44	Taxes, city.	184 00
" Chicoutimi	2,825 24	General expenses.	1,634 22
" Sorel.	815 25	Expenses of pilots.	624 90
" St. Thomas.	77 86	Indemnity to directors.	600 00
" Rimouski.	249 66	Insurance.	36 60
" Riviere du Loup.	298 05	Pilotage paid twice, and remitted.	1,751 56
" Escoumaines	46 38	Pilots pensioned.	1,000 00
Interest, Banque Nationale.	228 50	Salary of employees.	1,750 00
Fines.	100 00	" caretaker.	500 00
Lost time.	1,448 28	Board at Father Point	2,556 65
Board, Father Point.	2,343 00	Decayed pilots fund.	9,727 59
" remitted by directors and pilots	73 00	Dividends.	124,080 00
Pilotage collected at Quebec	129,490 45	Reserve fund.	1,000 00
		Balance.	1,904 65
	\$149,465 67		\$149,465 67

STATEMENT OF MONEYS RECEIVED AND EXPENDED BY THE CORPORATION OF
PILOTS FOR THE DECAYED PILOT FUND OF QUEBEC DURING THE YEAR.

RECEIPTS.		EXPENDITURES.	
Balance of 1911.	\$ 30,594 91	By pensions.	\$ 14,344 37
Contribution of pilots	9,727 59	Assistance	206 65
Interest on investments.	2,998 25	Salaries.	550 00
" from savings bank.	849 48	Deposits in savings banks.	51,139 21
Debentures, treasury department re- mitted.	20,000 00		
Amount of fines.	1,090 00		
Remitted by corporation of pilots.	1,000 00		
	\$66,260 23		\$ 66,260 23

4 GEORGE V., A. 1914

REPORT OF THE CORPORATION OF PILOTS FOR AND BELOW THE
HARBOUR OF QUEBEC, ETC.—*Concluded.*

PENSIONERS AT THE EXPENSE OF THE FUND.

17 pilots at.....	\$300 00	\$ 5,100 00
1 "	270 00	270 00
11 "	216 00	2,350 32
26 widows at.....	116 00	2,777 78
11 "	112 00	1,213 10
6 "	110 00	562 90
6 "	106 00	636 00
5 "	100 00	472 27
1 "	96 00	384 00
1 "	76 00	76 00
1 "	70 00	70 00
1 "	68 00	68 00
1 "	64 00	64 00
10 children at.....	30 00	300 00
101 pensioners.		\$ 14,344 37

STATEMENT OF INVESTMENTS.

RECEIPTS.		EXPENDITURES.	
Balance of 1911.....	\$ 30,594 91	By pensions, 1912.—	
Debentures of City of Quebec, Class "B", \$9,000 at 7 per cent.....	630 00	" assistance.....	\$ 206 65
Treasury department debentures remitted, July 2, 1912.....	20,000 00	" quarter to 31 January, 1912.....	3,655 12
Treasury department, 1 year interest to July 1, \$20,000 at 5 per cent.....	1,000 00	" " 30 April, 1912.....	3,573 50
Corporation of pilots, 1 year interest on \$3,000 at 4 per cent.....	120 00	" " 31 July, 1912.....	3,598 93
From Corporation of pilots remittance on loan.....	1,000 00	" " 31 October, 1912.....	3,516 82
The Corporation of St. Valier, 1 year interest on \$5,000 at 4 per cent.....	280 00	" Salary of secretary-treasurer and assistant.....	550 00
The Corporation of St. Romuald, 1 year interest on \$14,000 at 4 per cent	560 00	" Deposits in savings banks.....	51,159 21
	\$ 66,260 23		\$ 66,260 23

STATEMENT OF FUNDS.

Money loaned.....	\$ 50,700 00
Money in savings banks	51,159 21
Net capital.....	\$101,859 21

PH. LAMONTAGNE,
Secretary-Treasurer.

QUEBEC, December 31, 1912.

QUEBEC, December 28, 1912.

REPORT OF CAPTAIN J. B. BELANGER, MASTER C. G. S. 'EUREKA.'
NUMBER of Miles run, Vessels Boarded and Passing off.

Months.	STEAMERS BOARDED.				STEAMERS PASSING OFF.		
	Miles.	Inward.	Outward.	Total.	Inward.	Outward.	Total.
May.....	400						
June.....	774	75	75	150	40	30	70
July.....	987	114	96	210	50	64	114
August.....	887	106	101	207	54	40	94
September.....	834	105	92	197	60	52	112
October.....	1,065	82	64	146	50	20	70
November.....	1,012	76	100	176	40	10	50
December.....	380	1	9	10	4	6	10
Total.....	6,279	559	537	1,096	298	222	520

SESSIONAL PAPER No. 21

YACHTS AND SAILING SHIPS.

	Inward.	Outward.	Total.
Yachts.....	12	18	30
Barques.....	9	6	15
	21	24	45

Total boarded—	
Steamers.....	1,096
Yachts.....	30
Barques.....	15
	1,141
Total passing off.....	520

CAPTAIN J. B. BELANGER,
Master C. G. S. 'Eureka.'

TABLE 1.—Rates of pilotage for the Harbour of Quebec and below, for each foot of draught water.

PILOTAGE RATES.

From.	To	From May 1 to Nov. 10.	From Nov. 10 to Nov. 19.	From Nov. 19 to Mar. 1	From Mar 1 to May 1.
Father Point or any place below the anchorage of Brandy Pots, off Hare island.....	Anchorage or mooring ground in the basin or harbour of Quebec.....	\$3 87	\$4 95	\$6 02	\$4 41
The Anchorage ground at the Brandy Pots off Hare Island or any place above the said anchorage ground and below St. Rock's Point.	do ..	$\frac{2}{3}$ of this sum.	$\frac{2}{3}$ of this sum.	$\frac{2}{3}$ of this sum.	$\frac{2}{3}$ of this sum.
St. Rock's Point or any Place above this point and below the Pointe-aux-Pins or Crane Island or any place below St. Patrick's Hole	do ..	$\frac{1}{3}$ of this sum.	$\frac{1}{3}$ of this sum.	$\frac{1}{3}$ of this sum.	$\frac{1}{3}$ of this sum.
The anchorage or mooring ground in the Basin or Harbour of Quebec.....	Father Point or the place where the pilot shall be discharged in the river below Quebec.....	\$3 40	\$4 46	\$5 54	\$3 93

From	To	--
Any wharf in the harbour of Quebec between Pointe-à-Carcy below, and the West End of the Allan's Wharf above, both inclusive.....	Any other wharf within said limits...	\$2 50
Any place in the harbour of Quebec, not being a wharf within the above mentioned limits.....	Any other place in the said harbour not being a wharf within the said limits.	5 00

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
RESTIGOUCHE, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	When Appointed.
W. F. Napier	O. C. December 6, 1905.
A. H. Hilyard	O. C. May 5, 1903.
D. Champoux.....	O. C. February 8, 1907.
J. E. Stewart.....	O. C. March 2, 1912.
J. T. Mowat	O. C. February 9, 1912.

NAMES OF PILOTS.

Names.	Age.	Earnings.
Joseph Elsliger.	56	\$ 1,049 79
Edward Elsliger	47	1,049 78
William Donohue	45	1,049 78
Niels Nielson.....	38	1,049 78
Dan C. McNeil	36	1,049 78
		\$5,248 91

No apprentices in this district.
No white flag ships licensed this year.

VESSELS WHICH PAID PILOTAGE FEES FOR THE YEAR.

--	Tonnage.	Amount paid.
23 British steam vessels	44,623	\$2,219 12
15 British sailing vessels.....	3,760	626 25
12 Foreign steam vessels.....	16,345	1,075 89
53 Foreign sailing vessels	59,062	1,968 39
103	123,790	\$5,889 65

SESSIONAL PAPER No. 21

RECEIPTS AND EXPENDITURES.

RECEIPTS.

EXPENDITURES.

Pilotage dues,.....\$	5,889 65	Retained for expenses of—	
		Commission, including Secretary's salary \$	176 67
		Expenses of boats and upkeep.....	464 07
		Divided amongst six pilots	5,248 91
	\$ 5,889 65		\$ 5,889 65

PILOTAGE BOATS.

Name or Number.	Cost of Maintenance.
No. 1.....	No account kept separate for each boat.
No. 2.....	Pilots keeping everything together.

Navigation opened May 6 and closed November 25, 1912.

W. F. NAPIER,

Secretary.

December 31, 1913.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in the respect of pilotage:—

The rates on pilotage including the properly securing and mooring all ships or vessels, pilotage for the several ports within the pilotage district of Restigouche shall be as follows:—

For every foot of water any ship or vessel shall draw at the time inward or outward bound in the port of Dalhousie, Benjamin, Beaver point, Nash creek, Jacquet's river, or any loading station east of Dalhousie on the Bay of Chaleur, \$1.50; Port of Campbelltown, \$2; Oak bay or any loading station east of same, west of Dalhousie, \$2, when ships proceed direct from sea.

Ships bound for Dalhousie, Benjamin, Beaver point, Nash's creek, Jacquet river, or any loading station east of Dalhousie, calling at any of the said harbours for orders, or to discharge ballast, cargo, or otherwise on ship's account, \$1.50; and thence to the said port or loading stations on the Bay of Chaleur, 75 cents per foot draught of such ships at the time.

Ships bound for Campbellton, Oak bay or any loading station east of Oak bay and west of Dalhousie, waiting at Dalhousie or any of the outer bay ports to discharge ballast cargo or otherwise on ship's account, \$1.50, and thence to the said port of Campbellton, 75 cents; Oak bay or any loading station east of Oak bay, and west of Dalhousie, 75 cents per foot draught of such ship at the time and vice versa.

For removal of any ship, including the properly securing and mooring such ship, the following rates, viz.: The sum of one dollar and fifty cents for ships not exceeding one hundred and twenty tons; the sum of two dollars for ships over one hundred and twenty tons and not exceeding three hundred tons; the sum of four dollars for ships over three hundred tons and not exceeding six hundred tons; and the sum of five dollars for all ships over six hundred tons; and when the distance of removal extends four miles, fifty per cent additional to above rates. In addition to above rates all vessels propelled wholly or in part by steam shall pay one cent inwards and one cent outwards per net registered tonnage.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
RICHIBUCTO, N.B., FOR THE YEAR ENDING DECEMBER, 31, 1912.

Commissioners.	When Appointed.
Wm. J. Brait.....	C. C. May 8, 1888
Richard R. O'Leary	O. C. June 21, 1909
Frank Curran.....	" "
W. E. Forbes	" "
Fred. Ferguson.....	" "

Names of Pilots.	Ages.	Earnings.
		\$ cts.
George Long.....	70	9 00
James Long.....	71	
John Curwin	62	
William Long	63	66 00
		75 00

VESSELS WHICH PAID PILOTAGE FEES FOR THE YEAR.

	Tonnage.	Amount paid.
		\$ cts.
1 Foreign steam vessel.....	90	9 00
2 Foreign sail vessels	700	66 00
		75 00

Navigation opened April 15 and closed December 20, 1912.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in the respect of pilotage.

\$1.50 each, inward and outward, per foot.

Not exceeding 80 tons, \$5 each way; below 50 tons, \$3 each way.

The annual meeting of the pilotage commissioners was held in the court house on April 26, 1912

The following pilots were granted licenses for the year 1912:—

James Long	No. 1
William Long	" 2
Albert Long	" 3
John Curwin	" 4
Geo. Long	" 5
Henry Irving	" 6

FRED. FERGUSON,
Secretary.

December 31, 1912.

SESSIONAL PAPER No. 21

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
SACKVILLE, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

Pilotage Commissioners.	When Appointed.
Albion Gray.....	O. C. Nov. 8, 1906
Thomas R. Anderson.....	O. C. Feb. 13, 1907
Capt. Nelson Packham.....	O. C. Jan. 24, 1911

Names of Pilots.	When Appointed.	Age.	Earnings.
			\$ cts.
Willard Barnes.....	1890	61	81 50
Luther Snowden.....	1910	51	6 00
			87 50

No apprentices in this district.
No white flag ships licensed this year.

VESSELS WHICH PAID PILOTAGE FEES FOR THE YEAR.

	Tonnage.	Amount paid.
		\$ cts.
4 British sailing vessels.....	840	48 00
3 Foreign sailing vessels.....	769	39 50
		87 50

The pilots own their boats and do not render the commissioners any maintenance cost.
Navigation opened on March 1 and is still open at this date.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in respect of pilotage:—

Pilotage charges are: 5 cents per register ton, inward; 3 cents per register ton, outward.

There are no other pilotage charges and the pilots often arrange with masters of ships to accept half the above fees if when the master can obtain a towboat, he has his vessel towed instead of sailing the vessel in and outward—it is often that towboats cannot be obtained when required.

THOS. R. ANDERSON,

Secretary.

January 31, 1913.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
SHEDIAC, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

Pilotage Commissioners.	When Appointed.
Michael Connors.....	O. C. Jan. 12, 1906
J. Chas. Roberts.....	" "
Geo. McDevitt.....	" "
D. J. Doiron.....	" "
E. R. McDonald	" "

Names of Pilots.	Age.	Earnings.
		\$ cts.
Thomas McGrath.....	66	...
Oliff Hendrickson.....	51	94 00
Paul P. LeBlanc.. . . .	68	181 05
		275 05

No apprentices in this district.
No white flag ships licensed during year.
Vessels which paid pilotage fees for the year—
Foreign steam vessels ; tonnage..... 1,295 amount paid..... \$104 55
Foreign sail vessels ; tonnage..... 1,697 amount paid..... 170 50

Receipts.	Expenditures.
Pilotage dues..... \$275 05	Paid pilots..... \$269 55
	Paid secretary commission..... 5 50
	\$275 05

No pilotage boats.
Navigation opened April 23 and closed December 27, 1912.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in the respect of pilotage:—

Draught of water for vessels inwards, one dollar and fifty cents (\$1.50) per foot draught of water for vessels outwards bound, and for the removal of any ship or vessel and seeing such ship or vessel properly secured or moored, the sum of four dollars (\$4) for each such removal, hauling a vessel into the wharf or dock from the stream not to be considered a removal. It was ordered on May 30, 1908, 'That all ships or vessels propelled by steam or driven by power other than sails shall pay 4 cents per ton on her registered tonnage in addition to the above rules.

E. R. McDONALD,
Secretary.

February 8, 1913.

SESSIONAL PAPER No. 21

REPORT OF THE PILOTAGE COMMISSIONERS FOR THE DISTRICT OF SHEPODY BASIN, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

Commissioners.	When Appointed.	Changes.
Watson H. Steeves.....	O. C. October 10, 1912...	Replaced Hon. C. J. Osman.
Isaac C. Prescott.....	" " ..	" E. H. Lunds.
B. T. Carter.....	" " ..	" Henry A. Turner.
Capt. Robt. C. Bacon.....	O. C. June 24, 1911	
Geo. R. Paysant..	" "	

Names of pilots, when appointed, age and earnings—

Herbert H. Peck, April 30, age 36.....	\$129 72
Joshua Christopher, April 30, 1912, age 39.....	497 58
John E. Bishop, April 30, 1912, age 62.....	
Charles Bishop, April 30, 1912, age 60.....	246 06
	<u>8873 36</u>

No.	Vessels which paid pilotage fees for the year.	Tonnage.	Amount paid.
			\$ cts.
1	British steam vessels.....	690	24 15
2	" sailing "	1,095	32 92
41	Foreign steam "	22,665	1,013 81
12	" sailing "	6,279	202 48

Receipts.	Expenditures.
By 4 pilots' licenses..... \$ 60 00	To Hon. C. J. Osman, chairman, for services and expenses..... \$ 12 00
	" E. H. Lunds, for services and expenses 12 00
	" Henry A. Turner, for services and expenses..... 12 00
	" Robt. C. Bacon, for services and expenses..... 12 00
	" Geo. R. Paysant 12 00

B. T. CARTER,
Secretary.

December 5, 1912.

REPORT OF PILOTAGE COMMISSIONERS OF THE DISTRICT OF
ST. ANN'S, VICTORIA COUNTY, N.S., FOR THE YEAR
ENDING DECEMBER 31, 1912.

Commissioners.	Appointed.	Changes.
Angus J. McRitchie	O.C. April 23rd, 1904.	None.
Capt. Murdock Smith.	O.C. April 23rd, 1904.	"
D. McAulay.	O.C. April 23rd, 1904.	"

NAMES, AGES AND EARNINGS OF PILOTS.

Names.	Age.	Appointed.	Earnings.
Joseph Fader.	59	May 1, 1904	\$ 171 50
Angus B. Morrison.	49	" 1, 1904	171 50
Arch. Carmichael.	42	" 1, 1904	171 50
Dan. Buchanan.	40	" 1, 1904	171 50
			686 00

No apprentice pilots in this Authority.
No white flag ships licensed during the year.
Vessels which paid pilotage fees for the year—
Fifteen foreign steam vessels, tonnage 21,441, amount paid \$686.
Each pilot has his own boat.
Navigation opened last of April and closed about January 15, 1913.

Scale of pilotage fees for the pilotage district of St. Ann's in the County of
Victoria, N.S.:—

Vessels of	120 to	200 tons	.. .. .	\$ 7 00
"	200 "	250 "	.. .. .	8 00
"	250 "	300 "	.. .. .	9 00
"	300 "	350 "	.. .. .	12 00
"	350 "	400 "	.. .. .	13 00
"	400 "	450 "	.. .. .	14 00
"	450 "	500 "	.. .. .	15 00
"	500 "	600 "	.. .. .	16 00
"	600 "	700 "	.. .. .	17 00
"	700 "	800 "	.. .. .	18 00
"	800 "	900 "	.. .. .	19 00
"	900 "	1,000 "	.. .. .	20 00
"	1,000 "	1,500 "	.. .. .	21 00
"	1,500 "	2,000 "	.. .. .	24 00

DONALD McAULAY,
Secretary.

January 1, 1913.

SESSIONAL PAPER No. 21

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
ST. JOHN, N.B., FOR THE YEAR ENDING DECEMBER 31, 1912.

Commissioners.	When Appointed.	Changes.
Edward Lantlum	Appointed by City Council, June 9, 1885	
James Knox	" " Jan. 31, 1894	
J. Willard Smith	" Board of Trade, Sept. 19, 1894	
H. C. Schofield	" " Oct. 3, 1911	
John C. Chesley	O. C. October 31, 1912	Replaced Howard D. Troop.
James Lewis	O. C. October 31, 1912	" Chas. McLaughlin.
James E. Cowan	O. C. October 31, 1912	" Arthur W. Adams.

NAMES OF PILOTS AND EARNINGS.

Names of Pilots.	When Appointed.	Age.	Amount Paid.
James Bennett	1882	55	\$ 2,001 82
Alfred Cline	1878	55	84 80
Richard B. Cline	1898	41	447 10
James Doyle	1874	75	1,899 90
Joseph Doherty	1874	66	1,477 69
Robert Doherty	1908	27	3,649 10
James H. Miller	1899	32	2,250 83
William Murray	1899	38	2,369 80
Fen. M. McKelvey	1908	26	3,048 60
Wm. Quinn	1874	65	2,301 45
Bartholemew Rogers	1881	55	2,221 30
James Spears	1874	67	856 88
Henry Spears	1874	61	167 65
William J. Spears	1908	26	2,694 60
John L. C. Sherrard	1874	78	190 00
Thos. J. Stone	1874	59	1,764 35
Richard Scott	1874	61	.....
William Scott	1878	56	2,142 75
John S. Thomas	1874	64	1,808 30
Thos. Traynor	1874	59	1,950 61
			\$ 33,327 53

Henry Spears died February 8, 1912.

John L. C. Sherrard was placed on retired list on March 1, 1912.

Total amount of pilotage received	\$ 37,238 44
LESS—	
25c. per foot from outward pilotage received	\$2,151 31
5% from net pilotage	1,759 60
	3,910 91
	\$33,327 53

NAMES OF APPRENTICES.

Name.	When Appointed.	Age.
John F. Abbott	June 1, 1910	17
Wm. P. Traynor	" 1, 1910	18
Wm. Scott	" 1, 1910	18

These apprentices are paid monthly by the boat to which they are attached.

VESSELS WHICH PAID PILOTAGE FEES FOR THE YEAR.

Number.		Tonnage.	Amount Paid.
244	British steam vessels.....	822,354	\$27,565 62
38	" sailing ".....	28,193	2,971 52
11	Foreign steam vessels.....	17,009	935 64
193	" sailing ".....	60,265	5,765 66
546			\$ 37,238 44

STATEMENT OF PENSIONS OR RELIEF FUND.

At credit of fund, December 31, 1911.....	\$ 4,164 11
By interest on bank deposits.....	406 47
Amount from income account \$985.61, Special fund transferred \$9,488.71...	10,474 32
5% from net pilotage \$1,759.60, unclaimed pilotage \$426.00.....	2,185 60
	\$17,230 50
Contra—	
Pensions paid to pilots and widows.....	2,407 50
Balance to credit of Pilot Fund, December 31, 1912.....	\$14,823 00

DETAILED STATEMENT OF RECEIPTS AND EXPENDITURES.

RECEIPTS.		EXPENDITURES.	
Balance December 31, 1911.....	\$ 1,685 18	Pensions paid pilots.....	\$ 787 50
25c. per foot from outward pilotage....	2,151 31	" " widows.....	1,620 00
5% from next pilotage.....	1,759 60	Auditing accounts.....	25 00
Licenses to 18 pilots.....	90 00	Office rent.....	100 00
" 4 boats.....	40 00	Salary, Sec.-Treasurer.....	1,000 00
Interest on deposits, Savings Bank....	267 99	Stationery, &c.....	19 30
Bank of New Brunswick.....	138 48	Inspecting pilot boats.....	20 00
Pilotage unclaimed.....	426 00	Painting office, &c.....	81 00
		Legal services.....	35 00
		Dr. Crockett examining pilots as to eyesight.....	5 00
		Sundries.....	10 40
		Accrued interest—	
		Dominion Savings Bank	267 99
		Bank of New Brunswick....	138 48
		Balance in Bank of New Brunswick..	2,448 89
	\$ 6,558 56		\$ 6,558 56

PILOTAGE BOATS.

Number.	Name.	Statement of Cost of Maintenance.
1	Howard D. Troop.....	Owned and maintained by the pilots.
2	James U. Thomas.	" "
3	Nina Blanche	" "
4	Lightning.....	" "

Navigation is open all the year round.

SESSIONAL PAPER No. 21

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in respect of pilotage:—

RATES.

On all steamships not otherwise exempt.

Inward—

1st District.....	\$2 00	per foot draught of water
2nd "	2 50	" "
3rd "	3 00	" "

Outward—

To Partridge island.....	\$1 75	per foot.
Down the bay of Fundy (not compulsory).....	2 75	"

SAILING SHIPS.

Inward—

1st District.....	\$1 50	per foot draught of water
2nd "	1 75	" "
3rd "	2 25	" "

Outward—

To Partridge island.....	\$1 25	per foot.
Down the bay of Fundy (not compulsory).....	2 00	"

Transporting—

200 tons and under.....	\$ 2 00	From 2,000 and up to 2,500.....	\$13 00
From 200 tons and up to 300.....	3 50	2,500 " 3,000.....	15 00
300 " 400.....	4 00	3,000 " 3,500.....	17 00
400 " 500.....	5 00	3,500 " 4,000.....	19 00
500 " 1,000.....	7 00	4,000 " 4,500.....	21 00
1,000 " 1,500.....	9 00	4,500 " 5,000.....	23 00
1,500 " 2,000.....	11 00	5,000 tons and over.....	25 00

J. U. THOMAS,

Secretary.

January 6, 1913.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
SYDNEY AND NORTH SYDNEY, N.S., FOR THE YEAR ENDING
DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	When Appointed.
Vincent Mullins.....	O. C. May 13, 1912
Capt. T. Desmond.....	" "
R. T. J. Vooght.....	" "
F. C. Kimber.....	" "
Arch. McKinnon.....	O. C. Aug. 5, 1912

Names.	Earnings.
	\$ cts.
D. D. Petrie, (deceased)	962 15
Michael Curran.....	1,135 19
John Mahon.....	1,135 19
T. McNeil	1,135 19
T. Burke.....	1,135 19
E. F. Petrie.....	1,135 19
Joe Brown	1,108 19
L. Carroll.....	1,108 19
J. Carroll... ..	1,076 39
H. Ratchford.. ..	1,108 19
H. Petrie... ..	1,108 19
James McGillvray.....	1,108 19
L. Ling.....	1,135 19
D. A. McGinnes.. ..	1,108 19
V. McGillvray.....	1,056 29
B. Mullins.....	1,108 19
J. T. Mullins.....	1,108 19
J. Shanahan.....	901 39
J. H. Carroll.....	1,135 19
A. R. Richardson.....	1,108 19
John Cann.....	1,108 19
E. D. Cann.....	1,108 19
T. Ratchford	1,108 19
W. Langille	1,108 19
W. Perry.....	1,108 19
Y. H. Barrington (Supdt.)	878 17
James Fraser.....	962 15
George Fraser.....	1,108 19
T. Rudderham.....	1,108 19
T. Roberts.....	1,108 19
John McNeil.....	1,108 19
J. T. Laffin, (dismissed)	324 70
Geo. Spencer, "	324 70
J. B. McGillvary, (dismissed)	324 70
Peter Rigby, (dismissed)	324 70
John Boutilier, "	324 70
G. B. Brown, (deceased)	550 05
	35,903 84

SESSIONAL PAPER No. 21

NAMES OF APPRENTICE PILOTS AND EARNINGS.

Names.	Earnings.
	\$ cts.
F. McGillvray.....	567 59
James Young.	554 09
W. D. McGillvray.....	431 69
W. D. Morrison.....	431 69
John Connell.....	347 19
Walter Petrie.....	112 52
John Beaton, (dismissed) ..	123 40
Wm. Young, ".....	162 35
	2,736 52

WHITE FLAG SHIPS LICENSED FOR THE YEAR.

Names.	Class.	Amount.
		\$ cts.
Cacouna	Br. S.S.	100 00
Cape Breton.....	"	100 00
Louisburg.....	"	100 00
Coban	"	100 00
City of Sydney.....	"	100 00
Morwenna.....	"	100 00
Seal.....	"	100 00
Beatrice	"	100 00
		800 00

STATEMENT OF PENSIONS OR RELIEF FUND.

<i>Widows</i> —John Brown, I. McGillvray, C. McGillvray, Mary Petrie, Margaret Petrie, McGinnis, And. Ratchford and Jane Brown at \$30 each	\$ 240 00
<i>Ex-Pilots</i> —George Townsend, M. Doyle, John Fraser, W. Ratchford, and L. Connell at \$50 each.	\$ 250 00
	\$ 490 00

RECEIPTS AND EXPENDITURES.

RECEIPTS.		EXPENDITURES.	
Pilotage receipts.. . . .	\$ 38,634 36	Paid pilots.....	\$ 35,903 84
Relief and commission.....	2,079 96	" apprentices.....	2,730 52
Pilot licenses.....	103 00	" relief.....	490 00
Boat licenses.....	6 25	" ex-commissioners.....	387 50
White flag licenses.....	800 00	" ex-secretary.....	250 00
Bal. Dec. 31, 1911.....	635 55	" ex-collector.....	286 31
		" ex-superintendent.....	62 50
		" commissioners.....	412 50
		" secretary	250 00
		" three collectors.....	550 00
		" superintendent.....	212 50
		" office rent.....	100 00
		" printing, stationery, postage and miscellaneous.....	77 65
		Bal. cash in hand.....	545 80
	\$ 42,259 12		\$ 42,259 12

By-law No. 5.—The rates of pilotage shall be as follows:—

	To Sydney.	To North Sydney.
For vessels under 100 tons..	\$ 6 00	\$ 5 00
From 100 to 150 tons..	7 00	6 00
“ 150 to 200 “	8 00	7 00
“ 200 to 250 “	9 00	8 00
“ 250 to 300 “	10 00	9 00
“ 300 to 350 “	11 00	10 00
“ 350 to 400 “	12 00	11 00

And for every additional 50 tons or fractional part thereof, \$1; for vessels 800 tons and upwards, \$1 for every additional 100 tons or fractional part thereof. Outward pilotage shall be the same as inward. Vessels, upon being hailed by a licensed pilot outside the limits of the port, but within the pilotage district of Sydney, and refusing to, or not taking such pilot, shall pay half pilotage inwards; and upon being offered the services of a licensed pilot before being ready for sea and refusing the services of such pilot, shall be liable to half pilotage outward. Should the services of a pilot so offering be accepted by the master and afterwards declined, then the vessel shall be liable for full pilotage rates; and any pilot placed in charge of a vessel by the master shall be entitled to receive, in addition to full pilotage rates, the sum of two dollars per diem for each day the vessel may be detained while he is waiting on her, through stress of weather or otherwise. And in case a pilot is taken to sea the ship shall be responsible for his expenses unless returned to the port of Sydney. Vessels spoken by a pilot outside of her harbour limits or changing ports between Sydney and the ports of Lingan, Glace bay and Cow bay, shall only be liable for inward pilotage at the loading port, unless a pilot be employed in changing ports, in which case full tariff rates will be charged. Pilots delivering orders outside of port limits to vessels to proceed elsewhere shall be entitled to receive full inward pilotage only for such vessels, and pilots prevented from delivering orders after being received by them, by reason of the orders being signalled from light stations shall be entitled to receive full inward pilotage; and if, in any case, another regular pilot belonging to the same port be found in charge and the pilot delivering orders. Vessels arriving from sea without being spoken inwards by a pilot shall be subject to half pilotage outward unless a pilot be employed, in which case full outward pilotage will be charged, the half pilotage in this case to be paid into the pilotage fund. Vessels calling for orders and remaining outside of harbour limits shall be exempt from outward pilotage unless a pilot be employed.

F. C. KIMBER,
Secretary.

January 31, 1913.

SESSIONAL PAPER No. 21

REPORT OF THE PILOTAGE COMMISSIONERS FOR THE DISTRICT
OF TIDNISH AND NORTHPORT, NOVA SCOTIA, FOR THE YEAR
ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	Appointed.
Burpee Rockwell	O. C. July 28, 1899.
John Campbell.....	O. C. May 1, 1901.
Silas Taylor.....	O. C. Mar. 28, 1902.
J. Harvey Angus	O. C. June 19, 1902.
David Mitchell	O. C. June 15, 1903.

Pilot, Ferguson Brownwell, age 49, appointed Aug. 31, 1899 ; earnings \$25.
No apprentice pilots in this authority.
No white flag ships licensed for the year.
1 sailing vessel paid pilotage for the year to the amount of \$25. Tonnage, 800.

RECEIPTS AND EXPENDITURES.

RECEIPTS.		EXPENDITURES.	
Fees on pilotage.....	\$25 00	Pilot received.....	\$23 75
		Secretary's commission...	1 25
	\$25 00		\$25 00

Pilotage boat—1 boat (No. 2). Cost of Maintenance, \$10.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in respect of pilotage:—
One dollar per foot inwards, one dollar per foot outwards, and two dollars and fifty cents for shifting from ballast to loading ground.

BURPEE ROCKWELL,
Secretary.

January 6, 1913.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF
VANCOUVER, B.C., FOR THE YEAR ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Name.	When Appointed.	Change.
R. H. Alexander...	O. C. Feb. 3, 1883.....	
C. G. Major	O. C. Apr. 15, 1879 ...	
Frank Burnett.....	O. C. June 20, 1898	
F. W. Evans	O. C. Feb. 12, 1912.....	Replaced Robert Kelly.
H. G. Ross	O. C. Feb. 12, 1912	Replaced Geo. E. McDonald.

NAMES OF PILOTS AND EARNINGS.

Name.	When Appointed.	Age.	Amount Paid.	Earnings.
			\$ cts.	\$ cts.
Wm. Ettershank	June 18, 1888	70	4,347 66	Pilots work in one Company.
H. R. Jones	July 1, 1892	57	4,347 66	
Geo. W. Robarts	Oct. 1, 1907	40	3,440 57	
Robt. A. Bachelor	May 15, 1910	41	3,838 12	
Avery C. Anderson	Oct. 16, 1911	44	3,426 00	
And. Christansen	Feb. 1, 1912	38	3,050 60	
			22,450 61	35,547 30

VESSELS WHICH PAID PILOTAGE FEES FOR THE YEAR.

Number.		Tonnage.	Amount Paid.
			\$ cts.
227	British steam vessels	562,580	17,188 84
4	British sailing vessels	6,748	140 98
796	Foreign steam vessels	623,333	17,104 00
33	Foreign sailing vessels	42,164	1,113 48
1,060		1,534,825	35,547 30

PENSION OR RELIEF FUND.

There is no Pension or Relief Fund, but a Reserve Fund in Bank of Montreal Savings Department amounting to \$960.

DETAILED STATEMENT OF RECEIPTS AND EXPENDITURE.

RECEIPTS.	\$ cts.	EXPENDITURES.	\$ cts.
Balance in bank, Jan. 1, 1912	1,632 77	Paid pilots, Jan. 5, 1912	1,632 77
Pilotage earnings for 1912	35,547 30	Paid pilots during year 1912	22,450 61
		Office expense account, 1912	1,468 95
		Pilot boat and station expense account, 1912	4,983 18
		Pilots' travelling expenses, &c., 1912	4,558 80
		Balance in Bank	2,086 26
	37,180 07		37,180 07

PILOTAGE BOATS AND STATION.

Number or Name.	Statement of Cost of Maintenance.	
		\$ cts.
Pilot No. 1, gas	Men's wages, repairs and general running expenses	3,783 18
Pilot No. 2, gas	Building, payment on account	1,200 00
		4,983 18

Navigation is open all the year round.

The rates of pilotage dues for the time being in force in this district including the amounts and description of all charges upon shipping made in the respect of pilotage:—

For vessels entering into or clearing from the ports of Vancouver and Howe sound, the rates of pilotage are as follows:—

(a) For vessels under sail, \$2 per foot draught of water and 1 per cent net registered ton.

SESSIONAL PAPER No. 21

(b) For vessels in tow of a steamer, \$1 per foot draught of water and 1 per cent per net registered ton.

(c) For steamers, \$1 per foot draught of water, and 1 per cent net registered ton.

The pilotage from cape Flattery or Royal roads to a line drawn from Point Atkinson to the nun buoy on Spanish bank, or to the limits of Howe sound and vice versa, is not compulsory, but if the services of a pilot are required, he shall be paid the following rates, viz.:—

From cape Flattery	\$6 00 per foot.
From Callum	5 00 "
From Beechy head .. .	4 00 "
From Race rocks or Royal roads	3 00 "

And for vessels under steam or in tow of a steamer the following rates shall be paid:—

From cape Flattery	\$3 00 per foot.
From Callum bay.. .. .	2 50 "
From Beechy head	2 00 "
From Race rocks or Royal roads (vessels under steam)	1 00 "
From Race rocks or Royal roads (vessels under a steamer)	1 50 "

C. GARDNER JOHNSON,
Secretary.

January 2, 1913.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF VICTORIA AND ESQUIMALT, B.C., FOR THE YEAR ENDING DECEMBER 31, 1912.

Commissioners.	When Appointed.	Changes.
William Grant .. .	O. C. Oct. 22, 1901 .. .	To replace A. B. Fraser: Henry F. Bullen; Isaac G. Gould.
F. A. Pauline .. .	O. C. Sept. 25, 1909 .. .	
H. C. Wilson .. .	O. C. Nov. 29, 1912 .. .	
W. J. Stevens .. .	" " .. .	
G. A. Kirk .. .	" " .. .	
Joshua Kingham, secretary .. .	O. C. August 27, 1909 .. .	

Names of Pilots.	When Appointed.	Age.	Earnings.
John Newby .. .	1891	64	\$ 5,151 00
Wm. Cox .. .	1903	57	2,957 35
Chas. Israel Harris .. .	1910	45	4,782 70
Wm. Henry Whitely .. .	1911	50	4,509 40
			\$17,401 20

No apprentices in this district.
No white flag ships licensed this year.
21—27

Vessels which Paid Pilotage Fees for the Year.	Tonnage.	Amount Paid.
British steam vessels.....	704,846	\$ 7,312 44
" sailing " 	7,012	160 87
Foreign steam " 	689,746	9,623 60
" sailing " 	10,076	304 29

RECEIPTS.		EXPENDITURES.	
British steamers and sail.....	\$ 7,473 31	Pilots' drawings.....	\$ 15,661 30
Foreign " " 	9,927 89	Secretary's salary.....	600 00
Surplus, 1911.....	1,318 43	Office rent.....	420 00
Coasting licenses.....	850 00	Miscellaneous expenses.....	81 50
		Exchange on cheques.....	8 10
		Pilots' drawings--Surplus, 1911.....	1,181 84
		Refund to R. P. Rithet & Co. out of	
		1911 surplus.....	136 59
		Refund to Marine Trans. Co.....	32 30
		" "Lonsdale".....	0 68
		Amount uncollectable--"Amerly"....	30 26
		Refused payment C.P.R. "Monteagle"	23 80
		Surplus.....	1,393 63
	\$ 19,569 63		\$ 19,569 63

Pilotage Boats.	Statement of Cost of Maintenance.	
Colby No. 1.....	Expenditure for upkeep of plant, paid by the pilots out of their net earnings during year.	\$ 5,031 96
Colby No. 2.....		

Navigation is always open.

Pilotage Rates.

Vessels bound to other ports and coming to anchor in Royal roads, the pilotage shall be free, except the services of a pilot are employed, when pilotage according to the following graduated scale shall be payable:—

From inside or north of Race's rock to Royal bay, or *vice versa*, 50 per cent of the prescribed rates under clause (b), section 18. From Beechy road to Royal roads, or *vice versa*, \$1 per foot.

From Pillar point to Royal road, or *vice versa*, \$3 per foot.

From cape Flattery to Royal roads or *vice versa*, \$6 per foot draught of water.

For vessels entering into or clearing from the ports of Victoria and Esquimalt, the rates of pilotage shall be as follows:—

(1) For regular ocean steamers, 50 cents per foot draught of water and ½ cent per net registered ton up to a maximum of 3,500 tons, on the inward voyage, and 50 per cent of the above on the outward voyage subject to a discount of 20 per cent.

(2) For irregular ocean steamers, \$1 per foot draught of water, and ¾ cent per net registered ton.

(3) For regular steamers in the coasting trade between San Francisco and Lynn canal, inclusive, the rates shall be the same as for regular ocean steamers as rated in clause 1.

(4) For vessels under sail, \$2 per foot draught of water and 1 cent per net registered ton.

(5) For sailing in tow, \$1.50 per foot draught of water and 1 cent per net registered ton.

SESSIONAL PAPER No. 21

(6) For all vessels entering into or clearing from William's Head quarantine station, the rates shall be 50 per cent of the prescribed rates of any class of vessel for Victoria and Esquimalt, subject to exemption in section 17, clause 7; provided, however, that all coasters between San Francisco and Lynn canal inclusive, when compelled by special instructions from the Dominion Government to call at William's Head quarantine station, shall be exempt from pilotage dues unless the service of a pilot are requested.

(7) For all vessels of 500 tons and under, 75 cents per foot draught of water.

Gulf Pilotage.

For all vessels from the limits of the ports of Victoria and Esquimalt to the limits of all ports on Puget sound and gulf of Georgia, shall be \$1 per foot draught of water.

JOSHUA KINGHAM,
Secretary.

December 31st, 1912.

REPORT OF THE PILOTAGE COMMISSIONERS OF THE DISTRICT OF WALLACE, N.S., FOR THE YEAR ENDING DECEMBER 31, 1912.

PILOTAGE COMMISSIONERS.

Names.	Appointed.
Z. A. MacKay	O. C. April 30, 1883.
F. K. Grant.....	O. C. Oct. 6, 1891.
J. W. Morris	O. C. June 11, 1879.

NAMES, AGES AND EARNINGS OF PILOTS.

Names.	Age.	Appointed.	Earnings.
Alexander Patten	August, 1898.....	.....
Hudson Langille.....	October, 1892.....	.....

No apprentice pilots in this Authority.
No white flag ships licensed during the year.
No vessel entered subject to pilotage during the year.
Pilotage boats—Two, Nos. 1 and 2.
Date when navigation opened, about April 1; when closed, December 15.

The rates of pilotage dues for the Port of Wallace shall be as follows:—

Vessels of.	Inward.	Outward.
80 tons and under 160 tons	\$ 6 00	\$ 4 00
160 " " 230 "	9 00	6 00
230 " " 400 "	12 00	8 00
400 tons upward	14 00	10 00

On all vessels under 80 tons accepting the services of a pilot, five cents per ton inward and four cents per ton outward. Steamers rated at net tonnage. The above rates are for pilotage to or near the Wallace-Huestis grey stone wharf; up Wynn's channel to the Plaster wharf, or up the Fox harbour channel. Vessels requiring the services of a pilot to Wallace bridge, shall pay twenty-five cents per foot (draught), or if the Wallace freestone quarries or up to the bay of the Abiteau, then the sum of five cents per foot each way additional.

J. W. MORRIS,
Secretary.

January 1, 1913.

SESSIONAL PAPER No. 21

[illegible]

BRITISH COLUMBIA.

[illegible]

* Fees from fishing crews, \$18.

STATEMENT showing the result of returns of shipping and discharging of seamen, &c.—*Concluded.*
PRINCE EDWARD ISLAND.

Port.	County.	Shipping Master.	Half Year ending June 30, 1912.			Half Year ending Dec. 31, 1912.			Total.		
			Seamen Shipped.	Seamen Discharged.	Amount.	Seamen Shipped.	Seamen Discharged.	Amount.	Seamen Shipped.	Seamen Discharged.	Amount.
					\$ cts.			\$ cts.			\$ cts.
Alberton	Prince	F. Beers	126	18	68 70	150	112	108 60	276	130	177 30
Charlottetown	Queens	Neil Waddell	Nil.	Nil.							
Crapaud	"	Chas. Owen	14	Nil.	7 00				14		7 00
Georgetown	Kings										
Malpeque	Prince	H. J. Berhaut	Nil.	Nil.							
Murray Harbour	Queens										
Montague	Kings										
Pinette	Queens										
Port Hill	Prince										
St. Peter's	Kings										
Souris	"										
Summerside	Prince										
Tignish	"										
Total			140	18	75 70	150	112	108 60	290	137	184 30

RECAPITULATION.

	Seamen Shipped.	Seamen Discharged.	Amount.
Quebec	2,991	3,740	\$ 1,538 30
New Brunswick	3,242	1,677	1,171 30
Nova Scotia	7,466	5,813	5,491 10
Prince Edward Island	290	137	184 30
British Columbia	4,532	4,512	3,948 20
Total	18,521	15,879	\$12,333 20

N.B.—Two returns came in after summary was made.

APPENDIX No. 20.

STATEMENT OF EXPENDITURE OF MARINE BRANCH FROM CONFEDERATION TO MARCH 31, 1913.

1868..	\$ 371,070 56
1869..	360,899 90
1870..	367,189 11
1871..	389,537 12
1872..	518,958 49
1873..	706,817 92
1874..	845,150 90
1875..	844,586 09
1876..	970,146 27
1877..	820,054 38
1878..	786,156 23
1879..	755,359 47
1880..	723,390 89
1881..	761,730 62
1882..	774,831 53
1883..	825,010 82
1884..	927,241 61
1885..	1,129,901 14
1886..	980,120 59
1887..	917,557 31
1888..	883,250 85
1889..	1,023,801 34
1890..	807,417 53
1891..	885,410 11
1892..	861,426 80
1893..	898,720 03
1894..	905,654 34
1895..	895,828 28
1896..	793,634 49
1897..	867,772 90
1898..	856,192 50
1899..	1,102,601 90
1900..	982,561 97
1901..	1,029,925 32
1902..	1,501,618 88
1903..	1,671,494 77
1904..	2,150,940 31
1905..	4,747,722 81
1906..	5,066,252 66
1907..	3,637,599 82
1908..	5,374,774 18
1909..	4,692,806 85
1910..	4,197,420 24
1911-12..	4,911,140 67
1912-13..	5,213,223 55

